Alignment Guide: Arizona

Linking ACT Assessments and Arizona Standards to Drive Student Success

ACT®

Table of Contents

 MI07756. CJ10070. Version 1.2. 9/20/22

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 United States 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.

ACT Aspire is intended to measure student achievement and progress toward college and career readiness. ACT Aspire assessments for Early High School (EHS) are aligned with the ACT College and Career Readiness Standards (CCRS). ACT Aspire includes multiple-choice, constructed-response, and technology-enhanced items.

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 early 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 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 with the 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:

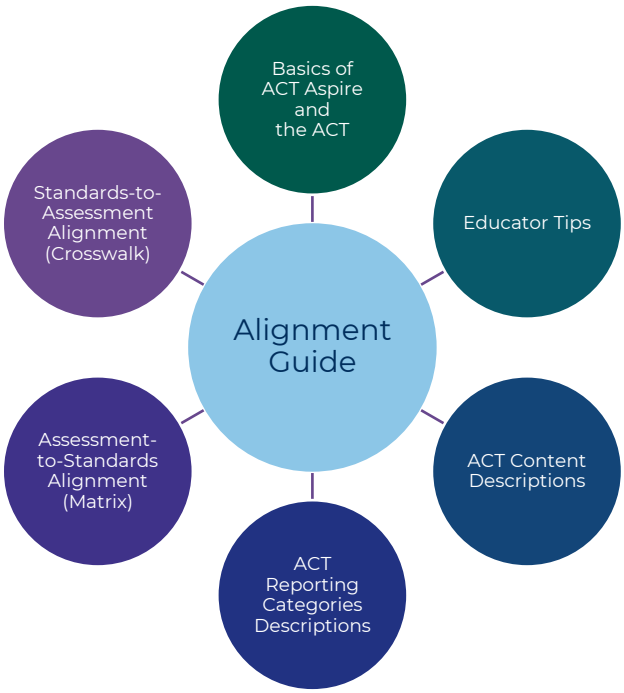
Assessments are only useful if those who could benefit from the information can access, interpret, and use the information to improve teaching and learning. Recognizing that appropriately educating all who interpret and make use of educational testing data is no small task, we offer a few suggestions. 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

This guide is intended to support assessment literacy by offering information about the content of ACT Aspire and the ACT and their alignment to state 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 state 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 ACT Aspire and the ACT* – Basic information about the knowledge and skills assessed by ACT Aspire and the ACT, the test 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
- *ACT Content Descriptions* – Descriptions of the content and structure of each subject test (English, reading, mathematics, science, and writing), plus test blueprints for all but the writing test
- *ACT Reporting Categories Descriptions* – Tables that list and describe the test 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 ACT Aspire and 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 ACT Aspire and 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 state 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 the state's standards.

III. ACT Aspire, the ACT, and Arizona Standards

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

Overview of ACT Aspire

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

Purpose. The principal purpose of ACT Aspire is to measure student achievement and progress toward meeting college and career readiness content standards. Secondary uses of the test are as follows:

- To provide instructionally actionable information to educators
- To inform evaluation of school and program effectiveness
- To help gauge students' readiness for advanced high school coursework
- To understand student and group performance relative to national norms

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

- English
- Reading
- Writing
- Mathematics
- Science

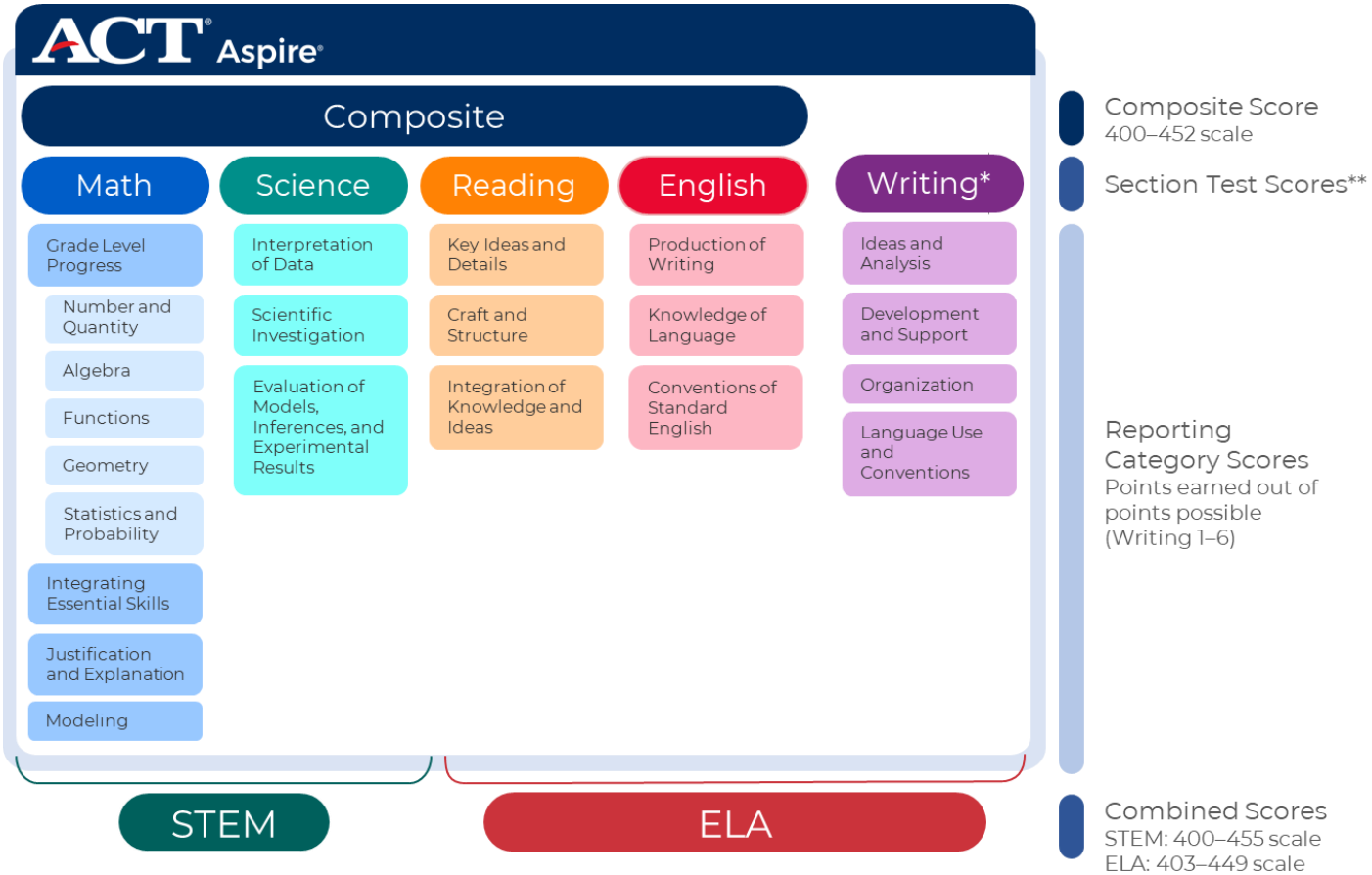
Scores. ACT Aspire provides a variety of scores, as shown in the diagram on the next page and described below:

- *Composite and subject scores* – Students receive a composite score as well as overall subject scores for English, mathematics, reading, and science. No overall score is report for the writing test, but writing is included in the calculation of the ELA score.
- *Science, technology, engineering, and math (STEM) score* – Combines mathematics and science scores
- *English language arts (ELA) score* – Students who take ACT Aspire English, reading, and writing tests receive a composite ELA score that shows how their overall performance compares to the readiness

benchmark at their grade. The composite ELA score is reported to provide insight about student skills that are integrated across the English language arts. This perspective aligns with the integrated approach to literacy education in leading achievement standards frameworks.

- *ACT Aspire reporting category scores* – Provide granular information about student performance in designated categories on each subject test

Scores Reported on ACT Aspire



*The writing section test score is not reported but is used for the calculation of the ELA score. The four writing test reporting category scores are reported.
** The section test scores are reported on a scale ranging from 400 to a maximum that varies by test (English: 456, Math: 460, Reading: 442, Science: 449).

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

- ACT Aspire measures student progress toward college and career readiness as defined by the pioneering research, data, standards, and benchmarks of ACT.
- Based on ACT CCRS, ACT Aspire assessments are consistent with many state standards that are focused on college and career readiness.
- Scores reflect the knowledge and skills students develop over time—across grades—and link these results to readiness for college and career, providing an evolving picture of student growth.
- Educators receive valuable data about student readiness. Educators have greater visibility into specific areas of academic risk and can apply earlier intervention This actionable information enables educators to address students' strengths, areas for improvement, and potential.

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:

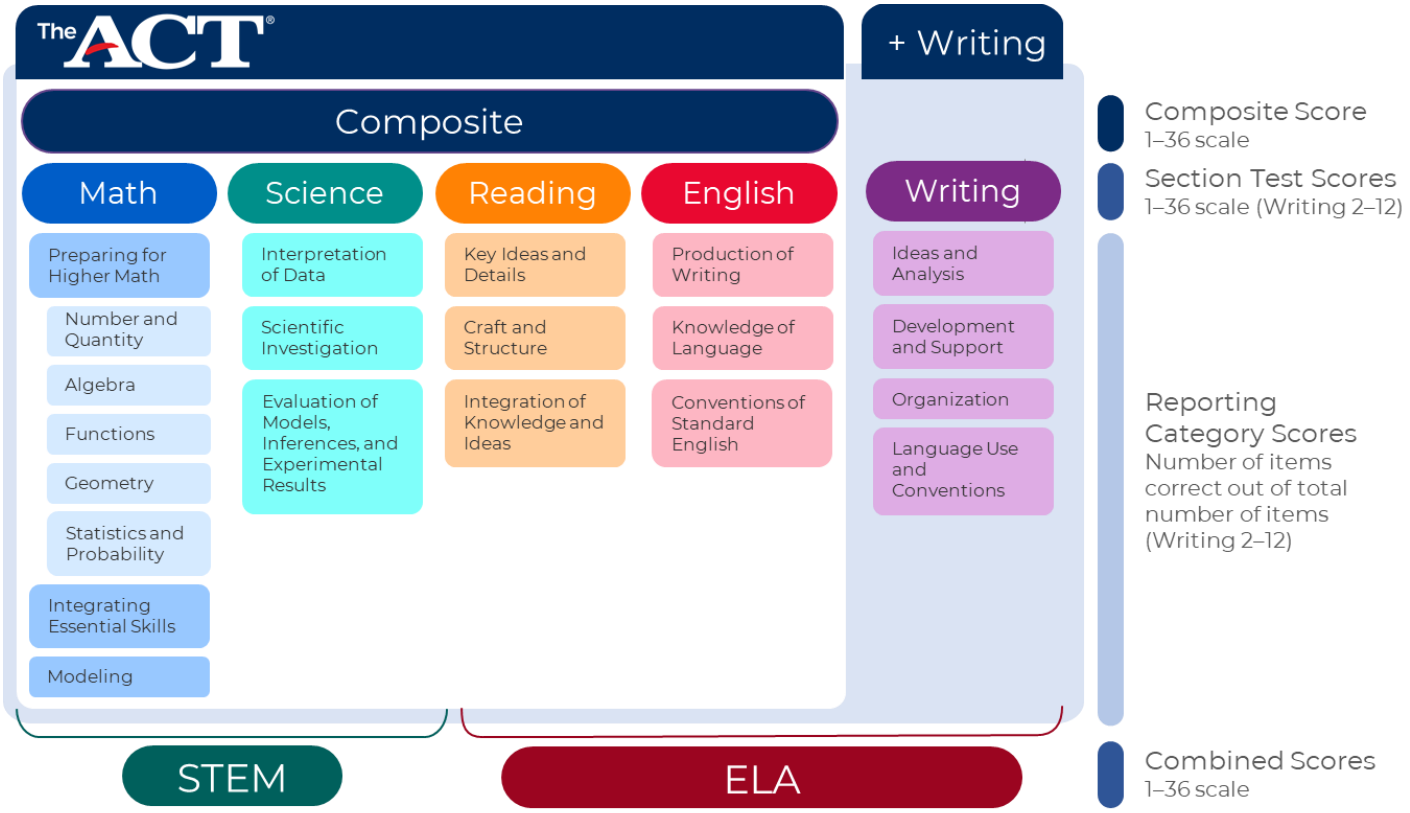
- English
- Reading
- Mathematics
- Science
- Writing

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

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

- *Composite and subject scores* – Students receive a composite score; overall subject scores for English, mathematics, reading, science, and writing; 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
- *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



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 (CCRS), 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 progress toward the ACT WorkKeys National Career Readiness Certificate (WorkKeysNCRC)

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

ACT Reporting Categories and Arizona Standards

Among the various scores reported for students who take ACT Aspire and 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 state standards.

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

- Arizona's English Language Arts Standards
- Arizona Mathematics Standards

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 assessments. They follow this three-step process for each subject area:

1. They analyze each of the Arizona standards to determine which ACT reporting category, if any, best matches the intent of the Arizona 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 Arizona 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 Arizona 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 state standards. Matrix tables are provided for all the ACT subject tests, with English, reading, and writing combined as ELA.
- *CROSSWALK: Arizona Standards to the ACT* – These tables provide the view of alignment from the other direction: users can look up each state standard to find the crosswalk with ACT content. Tables are provided for ELA, mathematics, and science.

MATRIX: The ACT to State Standards

	STATE STANDARDS			
ACT REPORTING CATEGORIES	State Standard	State Standard	State Standard	State Standard
ACT Reporting Category		X	X	
ACT Reporting Category		X		
ACT Reporting Category	X		X	

CROSSWALK: State Standards to the ACT

STATE STANDARDS	ACT REPORTING CATEGORIES
State Standard	ACT Reporting Category
State Standard	ACT Reporting Category
State Standard	ACT Reporting Category
State 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:

- ACT Content Descriptions
- ACT Reporting Category Descriptions
- MATRIX: ACT to Arizona Standards
- CROSSWALK: Arizona Standards to 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

ACT Content Descriptions

- *Curriculum and assessment design support –* The information on the structure of the ACT assessments, 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 assessments.
- *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 (CCRS) 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.

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 assessments.
- *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: ACT to Arizona 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 is not 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: Arizona Standards to 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 state 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

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.

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: ACT to Arizona 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 my state 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: Arizona Standards to 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

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.

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 state standards to create this glossary.

MATRIX: ACT to Arizona 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: Arizona Standards to ACT

- *Content coverage –* Review your course syllabi to determine if all the relevant state 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.

VI. English Language Arts (ELA)

ENGLISH

ACT Aspire Content Description

- *Item tally and time –* The ACT Aspire English test is a 62-item,* 45-minute test.
  * Total number of items includes 12 field-test items that do not contribute to score points.
- *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 table 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 multiple types of texts (essays, paragraphs, and sentences), each with multiple-choice or technology-enhanced questions.
  - Different text types are used to provide a variety of rhetorical situations.
  - Students must use the rich context of the text to make editorial choices, demonstrating their understanding of writing strategies and conventions.
  - Texts 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 Aspire English test—a total test score based on all 50 scored 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	13–14	26–28%
Knowledge of Language	6–8	12–16%
Conventions of Standard English	29–31	58–62%

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 table 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%

ACT Aspire and 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.

Reporting Category	Skill Area	Description/Examples
	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.
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

ACT Aspire Content Description

- *Item tally and time –* The ACT Aspire reading test is a 32-item,* 65-minute test.
  - * Total number of items includes 8 field-test items that do not contribute to score points.
- *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 table 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, accompanied by a sequence of multiple-choice, technology-enhanced, and constructed response test items.

* Total number of passages includes one passage for the 8 field-test items that do not contribute to score points.
    - Passages in the reading test include both literary narratives and informational texts from the 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 Aspire reading test—a total test score based on all 24 scored items, the three reporting category scores, and a Progress with Text Complexity 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	13–15	43–60%
Craft and Structure	6–8	20–37%
Integration of Knowledge and Ideas	2–3	17–20%

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 table 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%

ACT Aspire and 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	Analyze rhetorical devices and the structure of more challenging, complex, and highly complex texts.

Reporting Category	Skill Area	Description/Examples
	choices create effects on the reader.	
	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.
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

ACT Aspire Content Description

- *Time –* The ACT Aspire writing test is 40 minutes long.
- *Concept –* The test presents students with a single writing task that assesses their ability to compose an effective 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 table below):
    - **Ideas and Analysis:** Students generate a response that critically engages with the task. Proficient writers present a complex analysis that addresses implications and complications of the subject. They demonstrate skillful movement between specific details and generalized ideas.
    - **Development and Support:** Students thoroughly explain ideas, with skillful use of supporting reasons and detailed examples. Their claims and specific support are well integrated.
    - **Organization:** Students exhibit skillful strategy in organizing their ideas. Proficient writers arrange their essay in a way that shows a logical progression of ideas. Their use of transitions between and within paragraphs strengthen the relationships among ideas.
    - **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. Each prompt describes a central tension that surrounds a topic or idea. Students are asked to explain the values and challenges that surround the given topic, and to support their analysis with reasons and examples.

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	1–6	25%
Development and Support	1–6	25%
Organization	1–6	25%
Language Use and Convention	1–6	25%

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 table 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%

ACT Aspire Reporting Category Descriptions

Reporting Category (Rubric Domain)	Skill Area	Description/Examples
Ideas and Analysis	Purpose: Understanding the task and writing with purpose	1. Present a complex analysis of a given topic. 2. Identify and engage with the underlying tension presented in the prompt
	Critical Elements: Analyzing critical elements of an issue	1. Convey an understanding of the circumstances in which

Reporting Category (Rubric Domain)	Skill Area	Description/Examples
		the tension or problem exists. 2. Consider implications, complications, and/or underlying values and assumptions.
Development and Support	Reasoning and Evidence: Building and strengthening the argument	1. Demonstrate reasoning, using examples as necessary, that reinforces the main idea and moves the writer and reader toward a deeper understanding of the issue.
Organization	Connecting Ideas	1. Group and sequence ideas logically. 2. Use transitions to clarify relationships among ideas.
Language Use and Conventions	Enhanced Meaning: Using language to enhance meaning	1. Make word choices that strengthen the analysis. 2. Make effective stylistic choices (voice, tone, diction) that make the analysis compelling.
	Conventions of Written English: Applying the conventions of standard written English	Compose clear sentences with varied structures. Produce writing relatively free of errors in grammar, usage, and mechanics.

The ACT Reporting Category Descriptions

Reporting Category (Rubric Domain)	Skill Area	Description/Examples
Ideas and Analysis	Purpose: Understanding the task and writing with purpose	Generate a clear thesis that identifies the writer's objective. Engage with multiple perspectives on a complex issue.
	Critical Elements and Differing Perspectives: Analyzing critical elements	1. Establish a context for analysis; convey an understanding of the

Reporting Category (Rubric Domain)	Skill Area	Description/Examples
	of an issue and differing perspectives on it	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	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 4. critiques related to those complications or weaknesses.
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	Enhance Meaning: Using language to enhance meaning	Make word choices that strengthen the argument. Make effective stylistic choices (voice, tone, diction) that make the argument compelling.
	Conventions of Written English: Applying the	1. Compose clear sentences with varied structures.

Reporting Category (Rubric Domain)	Skill Area	Description/Examples
	conventions of standard written English	2. Produce writing relatively free of errors in grammar, usage, and mechanics.

MATRIX: ACT Aspire to Arizona Standards

ACT Aspire Aligned to Arizona's English Language Arts Standards, 9–10th Grade (Adopted 2016)

	Arizona's English Language Arts Standards, 9–10th Grade																			
	Reading Standards for Literature										Reading Standards for Informational Text									
	RL										RI									
ACT Aspire ELA Reporting Categories and Skill Areas	RL.1	RL.2	RL.3	RL.4	RL.5	RL.6	RL.7	RL.8	RL.9	RL.10	RI.1	RI.2	RI.3	RI.4	RI.5	RI.6	RI.7	RI.8	RI.9	RI.10
Reading																				
Key Ideas and Details																				
Close Reading	X									X										X
Relationships			X			X				X			X							X
Central Ideas, Themes, Summaries		X	X							X	X	X								X
Craft and Structure																				
Word Meanings and Word Choice				X						X				X						X
Text Structure			X	X	X				X	X				X	X					X
Purpose and Point of View										X						X				X
Integration of Knowledge and Ideas																				
Arguments	X									X	X							X		X
Synthesis of Multiple Texts									X	X							X			X
Visual and Quantitative Information						X				X										X
English																				
Production of Writing																				
Topic Development—Purpose and Focus	X			X							X			X	X					
Organization, Unity, and Cohesion					X										X					
Knowledge of Language																				
Expressing Ideas Clearly																				
Style																				
Conventions of Standard English																				
Sentence Structure and Formation																				
Usage Conventions																				
Punctuation Conventions																				

(continued)

(continued)

	Arizona's English Language Arts Standards, 9–10th Grade																			
	Reading Standards for Literature										Reading Standards for Informational Text									
	RL										RI									
ACT Aspire ELA Reporting Categories and Skill Areas	**RL.1**	**RL.2**	**RL.3**	**RL.4**	**RL.5**	**RL.6**	**RL.7**	**RL.8**	**RL.9**	**RL.10**	**RI.1**	**RI.2**	**RI.3**	**RI.4**	**RI.5**	**RI.6**	**RI.7**	**RI.8**	**RI.9**	**RI.10**
Writing																				
Ideas and Analysis																				
Purpose																				
Critical Elements and Differing Perspectives																				
Development and Support																				
Reasoning and Evidence																				
Organization																				
Connecting Ideas																				
Language Use and Conventions																				
Enhanced Meaning																				
Conventions of Written English																				

ACT Aspire ELA Reporting Categories and Skill Areas	Arizona's English Language Arts Standards, 9–10th Grade																					
	Writing Standards										Speaking and Listening Standards						Language Standards					
	W										SL						L					
	W.1	W.2	W.3	W.4	W.5	W.6	W.7	W.8	W.9	W.10	SL.1	SL.2	SL.3	SL.4	SL.5	SL.6	L.1	L.2	L.3	L.4	L.5	L.6
Reading																						
Key Ideas and Details																						
Close Reading																						
Relationships																						
Central Ideas, Themes, Summaries																						
Craft and Structure																						
Word Meanings and Word Choice																				X	X	X
Text Structure																					X	X
Purpose and Point of View																						
Integration of Knowledge and Ideas																						
Arguments																						
Synthesis of Multiple Texts																						
Visual and Quantitative Information																						
English																						
Production of Writing																						
Topic Development—Purpose and Focus				X	X															X	X	X
Organization, Unity, and Cohesion				X	X																	
Knowledge of Language																						
Expressing Ideas Clearly				X	X														X	X	X	
Style				X	X														X			
Conventions of Standard English																						
Sentence Structure and Formation					X												X					
Usage Conventions					X												X					
Punctuation Conventions					X													X				

(continued)

(continued)

ACT Aspire ELA Reporting Categories and Skill Areas	Arizona's English Language Arts Standards, 9–10th Grade																					
	Writing Standards										Speaking and Listening Standards†						Language Standards					
	W										SL						L					
	W.1	W.2	W.3	W.4	W.5	W.6	W.7	W.8	W.9	W10	SL.1	SL.2	SL.3	SL.4	SL.5	SL.6	L.1	L.2	L.3	L.4	L.5	L.6
Writing																						
Ideas and Analysis																						
Purpose		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*								
Organization																						
Connecting Ideas		X		X	X					X				X*								
Language Use and Conventions																						
Enhance Meaning		X		X	X					X				X*					X	X*	X	X
Conventions of Written English		X		X	X					X				X*		X*	X	X				

* Indirect association: While the ACT Aspire 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.

CROSSWALK: Arizona Standards to ACT

Arizona's English Language Arts Standards, 9–10th Grade (Adopted 2016) Aligned to ACT Aspire

Standard Number	Standard	ACT Aspire English Reporting Categories and Skill Areas	ACT Aspire Reading Reporting Categories and Skill Areas	ACT Aspire Writing Reporting Categories and Skill Areas
R-L	**Reading Standards for Literature**			
	Key Ideas and Details			
9-10.RL.1	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	Production of Writing: Topic Development—Purpose and Focus	Key Ideas and Details: Close Reading Integration of Knowledge and Ideas: Arguments	
9-10.RL.2	Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.		Key Ideas and Details: Central Ideas, Themes, Summaries	
9-10.RL.3	Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme.		Key Ideas and Details: Relationships; Central Ideas, Themes, Summaries Craft and Structure: Text Structure	
	Craft and Structure			
9-10.RL.4	Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone.	Production of Writing: Topic Development—Purpose and Focus	Craft and Structure: Word Meanings and Word Choice; Text Structure	
9-10.RL.5	Analyze how an author's choices concerning how to structure a text, order events within it, and manipulate time create such effects as mystery, tension, or surprise.	Production of Writing: Organization, Unity, and Cohesion	Craft and Structure: Text Structure	
9-10.RL.6	Analyze how points of view and/or cultural experiences are reflected in works of literature, drawing from a variety of literary texts.		Key Ideas and Details: Relationships Integration of Knowledge and Ideas: Visual and Quantitative Information	
	Integration of Knowledge and Ideas			
9-10.RL.7	Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment.			
9-10.RL.8	(Not applicable to literature)			
9-10.RL.9	Analyze how an author draws on and transforms source material in a specific work.		Integration of Knowledge and Ideas: Synthesis of Multiple Texts Craft and Structure: Text Structure	

(continued)

(continued)

Standard Number	Standard	ACT Aspire English Reporting Categories and Skill Areas	ACT Aspire Reading Reporting Categories and Skill Areas	ACT Aspire Writing Reporting Categories and Skill Areas
	Range of Reading and Level of Text Complexity			
9-10.RL.10	By the end of the year, proficiently and independently read and comprehend literature, including stories, drama, and poetry, in a text complexity range determined by qualitative and quantitative measures appropriate to grade 9. By the end of the year, proficiently and independently read and comprehend literature, including stories, drama, and poetry, in a text complexity range determined by qualitative and quantitative measures appropriate to grade 10.		All reporting categories	
RI	**Reading Standards for Informational Text**			
	Key Ideas and Details			
9-10.RI.1	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	Production of Writing: Topic Development—Purpose and Focus	Key Ideas and Details: Central Ideas, Themes, Summaries Integration of Knowledge and Ideas: Arguments	
9-10.RI.2	Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.		Key Ideas and Details: Central Ideas, Themes, Summaries	
9-10.RI.3	Analyze how the author constructs an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.		Key Ideas and Details: Relationships	
	Craft and Structure			
9-10.RI.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone.	Production of Writing: Topic Development—Purpose and Focus	Craft and Structure: Word Meanings and Word Choice; Text Structure	
9-10.RI.5	Analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).	Production of Writing: Topic Development—Purpose and Focus; Organization, Unity, and Cohesion	Craft and Structure: Text Structure	
9-10.RI.6	Determine an author's point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose.		Craft and Structure: Purpose and Point of View	

(continued)

(continued)

Standard Number	Standard	ACT Aspire English Reporting Categories and Skill Areas	ACT Aspire Reading Reporting Categories and Skill Areas	ACT Aspire Writing Reporting Categories and Skill Areas
9-10.RI.7	Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.		Integration of Knowledge and Ideas: Synthesis of Multiple Texts	
9-10.RI.8	Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.		Integration of Knowledge and Ideas: Arguments	
9-10.RI.9	Analyze seminal/primary documents of historical and literary significance, including how they address related themes and concepts.			
	Range of Reading and Level of Text Complexity			
9-10.RI.10	By the end of the year, proficiently and independently read and comprehend informational texts and nonfiction in a text complexity range determined by qualitative and quantitative measures appropriate to grade 9. By the end of the year, proficiently and independently read and comprehend informational texts and nonfiction in a text complexity range determined by qualitative and quantitative measures appropriate to grade 10.		All reporting categories	
W	**Writing Standards**			
	Text Types and Purposes			
9-10.W.1	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.			
9-10.W.1.a	Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence.			
9-10.W.1.b	Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns.			

(continued)

(continued)

Standard Number	Standard	ACT Aspire English Reporting Categories and Skill Areas	ACT Aspire Reading Reporting Categories and Skill Areas	ACT Aspire Writing Reporting Categories and Skill Areas
9-10.W.1.c	Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.			
9-10.W.1.d	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.			
9-10.W.1.e	Provide a concluding statement or section that follows from and supports the argument presented.			
9-10.W.2	Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.			All reporting categories
9-10.W.2.a	Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.			All reporting categories
9-10.W.2.b	Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.			All reporting categories
9-10.W.2.c	Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.			All reporting categories
9-10.W.2.d	Use precise language and domain-specific vocabulary to manage the complexity of the topic.			All reporting categories
9-10.W.2.e	Establish and maintain a formal style and an appropriate tone while attending to the norms and conventions of the discipline in which they are writing.			All reporting categories
9-10.W.2.f	Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).			All reporting categories

(continued)

(continued)

Standard Number	Standard	ACT Aspire English Reporting Categories and Skill Areas	ACT Aspire Reading Reporting Categories and Skill Areas	ACT Aspire Writing Reporting Categories and Skill Areas
9-10.W.3	Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.			
9-10.W.3.a	Engage and orient the reader by setting out a problem, situation, or observation, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.			
9-10.W.3.b	Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.			
9-10.W.3.c	Use a variety of techniques to sequence events so that they build on one another to create a coherent whole.			
9-10.W.3.d	Use precise words and phrases, relevant descriptive details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.			
9-10.W.3.e	Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.			
	Production and Distribution of Writing			
9-10.W.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	Production of Writing: Topic Development—Purpose and Focus; Organization, Unity, and Cohesion Knowledge of Writing: Style; Expressing Ideas Clearly		All reporting categories
9-10.W.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grades 9–10.)	All reporting categories		All reporting categories
9-10.W.6	Use technology, including the internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.			

(continued)

(continued)

Standard Number	Standard	ACT Aspire English Reporting Categories and Skill Areas	ACT Aspire Reading Reporting Categories and Skill Areas	ACT Aspire Writing Reporting Categories and Skill Areas
	Research to Build and Present Knowledge			
9-10.W.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.			
9-10.W.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.			
9-10.W.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.			
9-10.W.9.a	Apply grades 9-10 Reading standards to literature.			
9-10.W.9.b	Apply grades 9-10 Reading standards to informational text and nonfiction			
	Range of Writing			
9-10.W.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.			All reporting categories
SL	**Speaking and Listening Standards**	*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.*		
	Comprehension and Collaboration			
9-10.SL.1	Initiate and participate effectively in a range of collaborative discussions (one-on- one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.			
9-10.SL.1.a	Come to discussions prepared having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well- reasoned exchange of ideas.			
9-10.SL.1.b	Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, and presentation of alternate views), clear goals and deadlines, and individual roles as needed.			

(continued)

(continued)

Standard Number	Standard	ACT Aspire English Reporting Categories and Skill Areas	ACT Aspire Reading Reporting Categories and Skill Areas	ACT Aspire Writing Reporting Categories and Skill Areas
9-10.SL.1.c	Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.			
9-10.SL.1.d	Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections based on the evidence and reasoning presented.			
9-10.SL.2	Integrate multiple sources of information presented in diverse media and formats, evaluating the credibility and accuracy of each source.			
9-10.SL.3	Evaluate a speaker's point of view, reasoning, use of evidence, and use of rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.			
	Presentation of Knowledge and Ideas			
9-10.SL.4	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task; use appropriate eye contact, adequate volume, and clear pronunciation.			*Indirect association listed:* All reporting categories
9-10.SL.5	Make strategic use of digital media in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.			
9-10.SL.6	Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grades 9–10 Language standards 1 and 3 for specific expectations.)			*Indirect association listed:* Language Use and Conventions: Conventions of Written English
L	**Language Standards**			
	Conventions of Standard English			
9-10.L.1	Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking.	Conventions of Standard English: Sentence Structure and Formation; Usage Conventions Knowledge of Language: Style		Language Use and Conventions: Applying the Conventions of Standard Written English
9-10.L.1.a	Use parallel structure.	Conventions of Standard English: Sentence Structure and Formation; Usage Conventions Knowledge of Language: Style		Language Use and Conventions: Applying the Conventions of Standard Written English

(continued)

(continued)

Standard Number	Standard	ACT Aspire English Reporting Categories and Skill Areas	ACT Aspire Reading Reporting Categories and Skill Areas	ACT Aspire Writing Reporting Categories and Skill Areas
9-10.L.1.b	Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, and absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations.	Conventions of Standard English: Sentence Structure and Formation; Usage Conventions Knowledge of Language: Style		Language Use and Conventions: Applying the Conventions of Standard Written English
9-10.L.2	Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing.	Conventions of Standard English: Sentence Structure and Formation; Usage Conventions Knowledge of Language: Style		Language Use and Conventions: Applying the Conventions of Standard Written English
9-10.L.2.a	Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses.	Conventions of Standard English: Sentence Structure and Formation; Usage Conventions Knowledge of Language: Style		Language Use and Conventions: Applying the Conventions of Standard Written English
9-10.L.2.b	Use a colon to introduce a list or quotation.	Conventions of Standard English: Sentence Structure and Formation; Usage Conventions Knowledge of Language: Style		Language Use and Conventions: Applying the Conventions of Standard Written English
9-10.L.2.c	Use correct spelling.	Conventions of Standard English: Sentence Structure and Formation; Usage Conventions Knowledge of Language: Style		Language Use and Conventions: Applying the Conventions of Standard Written English
	Knowledge of Language			
9-10.L.3	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.	Knowledge of Language: Expressing Ideas Clearly; Style		Ideas and Analysis: Enhance Meaning
9-10.L.3.a	Write and edit work so that it conforms to the guidelines in a style manual.	Knowledge of Language: Expressing Ideas Clearly; Style		Ideas and Analysis: Enhance Meaning
	Vocabulary Acquisition and Use			
9-10.L.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9–10 reading and content, choosing flexibly from a range of strategies.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Sentence Structure and Formation; Usage Conventions	Craft and Structure: Text Structure; Word Meanings and Word Choice	*Indirect association listed:* Ideas and Analysis: Enhance Meaning
9-10.L.4.a	Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., analyze, analysis, analytical; advocate, advocacy).	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Sentence Structure and Formation; Usage Conventions	Craft and Structure: Text Structure; Word Meanings and Word Choice	*Indirect association listed:* Ideas and Analysis: Enhance Meaning

(continued)

(continued)

Standard Number	Standard	ACT Aspire English Reporting Categories and Skill Areas	ACT Aspire Reading Reporting Categories and Skill Areas	ACT Aspire Writing Reporting Categories and Skill Areas
9-10.L.4.b	Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Sentence Structure and Formation; Usage Conventions	Craft and Structure: Text Structure; Word Meanings and Word Choice	*Indirect association listed:* Ideas and Analysis: Enhance Meaning
9-10.L.4.c	Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Sentence Structure and Formation; Usage Conventions	Craft and Structure: Text Structure; Word Meanings and Word Choice	
9-10.L.4.d	Verify the preliminary determination of the meaning of a word or phrase.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Sentence Structure and Formation; Usage Conventions	Craft and Structure: Text Structure; Word Meanings and Word Choice	*Indirect association listed:* Ideas and Analysis: Enhance Meaning
9-10.L.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	Knowledge of Language: Expressing Ideas Clearly	Craft and Structure: Word Meanings and Word Choice	Ideas and Analysis: Enhance Meaning
9-10.L.5.a	Interpret figures of speech (e.g., euphemism, oxymoron) in context and analyze their role in the text.	Knowledge of Language: Expressing Ideas Clearly	Craft and Structure: Word Meanings and Word Choice	Ideas and Analysis: Enhance Meaning
9-10.L.5b	Analyze nuances in the meaning of words with similar denotations.	Knowledge of Language: Expressing Ideas Clearly	Craft and Structure: Word Meanings and Word Choice	Ideas and Analysis: Enhance Meaning
9-10.L.6	Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.	Knowledge of Language: Expressing Ideas Clearly Production of Writing: Topic Development—Purpose and Focus	Craft and Structure: Word Meanings and Word Choice	Ideas and Analysis: Enhance Meaning

MATRIX: The ACT to Arizona Standards

The ACT Aligned to Arizona's English Language Arts Standards, 11–12th Grade (Adopted 2016)

	Arizona's English Language Arts Standards, 11–12th Grade																			
	Reading Standards for Literature										Reading Standards for Informational Text									
	RL										RI									
The ACT ELA Reporting Categories and Skill Areas	RL.1	RL.2	RL.3	RL.4	RL.5	RL.6	RL.7	RL.8	RL.9	RL10	RI.1	RI.2	RI.3	RI.4	RI.5	RI.6	RI.7	RI.8	RI.9	RI.10
Reading																				
Key Ideas and Details																				
Close Reading	X									X										X
Relationships										X										X
Central Ideas, Themes, Summaries		X								X	X	X	X							X
Craft and Structure																				
Word Meanings and Word Choice				X						X				X						X
Text Structure			X	X	X					X				X	X					X
Purpose and Point of View						X				X						X				X
Integration of Knowledge and Ideas																				
Arguments	X									X	X	X						X		X
Synthesis of Multiple Texts									X	X										X
Visual and Quantitative Information										X							X			X
English																				
Production of Writing																				
Topic Development—Purpose and Focus	X			X							X			X						
Organization, Unity, and Cohesion					X										X					
Knowledge of Language																				
Expressing Ideas Clearly																				
Style																				
Conventions of Standard English																				
Sentence Structure and Formation																				
Usage Conventions																				
Punctuation Conventions																				

(continued)

(continued)

The ACT ELA Reporting Categories and Skill Areas	Arizona's English Language Arts Standards, 11–12th Grade																			
	Reading Standards for Literature										Reading Standards for Informational Text									
	RL										RI									
	RL.1	RL.2	RL.3	RL.4	RL.5	RL.6	RL.7	RL.8	RL.9	RL10	RI.1	RI.2	RI.3	RI.4	RI.5	RI.6	RI.7	RI.8	RI.9	RI.10
Writing																				
Ideas and Analysis																				
Purpose												X*					X*	X*		
Critical Elements and Differing Perspectives												X*					X*	X*		
Development and Support																				
Reasoning and Evidence																	X*	X*		
Organization																				
Connecting Ideas																		X*		
Organizational Strategy					X*										X*			X*		
Language Use and Conventions																				
Enhance Meaning				X*										X*		X*	X*	X*		
Conventions of Written English																		X*		

The ACT ELA Reporting Categories and Skill Areas	Arizona's English Language Arts Standards, 11–12th Grade																					
	Writing Standards										Speaking and Listening Standards†						Language Standards					
	W										SL						L					
	W.1	W.2	W.3	W.4	W.5	W.6	W.7	W.8	W.9	W10	SL.1	SL.2	SL.3	SL.4	SL.5	SL.6	L.1	L.2	L.3	L.4	L.5	L.6
Reading																						
Key Ideas and Details																						
Close Reading																						
Relationships																						
Central Ideas, Themes, Summaries																						
Craft and Structure																						
Word Meanings and Word Choice																				X	X	X
Text Structure																					X	X
Purpose and Point of View																						
Integration of Knowledge and Ideas																						
Arguments																						
Synthesis of Multiple Texts																						
Visual and Quantitative Information																						
English																						
Production of Writing																						
Topic Development—Purpose and Focus				X	X															X	X	X
Organization, Unity, and Cohesion				X	X																	
Knowledge of Language																						
Expressing Ideas Clearly				X	X												X		X	X	X	
Style				X	X														X			
Conventions of Standard English																						
Sentence Structure and Formation					X												X					
Usage Conventions					X												X					
Punctuation Conventions					X													X				

(continued)

(continued)

	Arizona's English Language Arts Standards, 11–12th Grade																					
	Writing Standards										Speaking and Listening Standards†						Language Standards					
	W										SL						L					
The ACT ELA Reporting Categories and Skill Areas	W.1	W.2	W.3	W.4	W.5	W.6	W.7	W.8	W.9	W10	SL.1	SL.2	SL.3	SL.4	SL.5	SL.6	L.1	L.2	L.3	L.4	L.5	L.6
Writing																						
Ideas and Analysis																						
Purpose	X	X	X*	X	X					X	X*		X*	X*								
Critical Elements and Differing Perspectives	X	X	X*	X	X					X	X*		X*	X*								
Development and Support																						
Reasoning and Evidence	X	X	X*	X	X					X	X*		X*	X*								
Organization																						
Connecting Ideas	X	X	X*	X	X					X	X*		X*	X*								
Organizational Strategy	X	X	X*	X	X					X	X*		X*	X*								
Language Use and Conventions																						
Enhance Meaning	X	X	X*	X	X					X	X*		X*	X*					X		X	X
Conventions of Written English	X	X	X*	X	X					X	X*		X*	X*		X*	X	X				

* Indirect association: 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.

CROSSWALK: Arizona Standards to the ACT

Arizona's English Language Arts Standards, 11–12th Grade (Adopted 2016) Aligned to the ACT

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
R-L	**Reading Standards for Literature**			
	Key Ideas and Details			
11-12.RL.1	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.	Production of Writing: Topic Development—Purpose and Focus	Key Ideas and Details: Close Reading Integration of Knowledge and Ideas: Arguments	
11-12.RL.2	Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.		Key Ideas and Details: Central Ideas, Themes, Summaries	
11-12.RL.3	Analyze the impact of the author's choices regarding how to develop and connect elements of a story or drama.		Craft and Structure: Text Structure	
	Craft and Structure			
11-12.RL.4	Determine the meaning(s) of words and phrases as they are used in a text, including figurative and connotative meanings, while analyzing the impact of specific choices on meaning and tone.	Production of Writing: Topic Development—Purpose and Focus	Craft and Structure: Word Meanings and Word Choice; Text Structure	*Indirect association listed:* Language Use and Conventions: Enhance Meaning
11-12.RL.5	Analyze how an author's choices concerning how to structure specific parts of a text contribute to its overall structure and meaning, as well as its aesthetic impact.	Production of Writing: Organization, Unity, and Cohesion	Craft and Structure: Text Structure	*Indirect association listed:* Organization: Organizational strategy
11-12.RL.6	Using a variety of genres, analyze how the narrative point of view impacts the implicit and explicit meanings in a text		Craft and Structure: Purpose and Point of View	
	Integration of Knowledge and Ideas			
11-12.RL.7	Analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text.			
11-12.RL.8	*(Not applicable to literature)*			
11-12.RL.9	Drawing on a wide range of time periods, analyze how two or more texts treat similar themes or topics.		Integration of Knowledge and Ideas: Synthesis of Multiple Texts	

(continued)

(continued)

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
	Range of Reading and Level of Text Complexity			
11-12.RL.10	By the end of the year, proficiently and independently read and comprehend literature, including stories, dramas, and poetry, in a text complexity range determined by qualitative and quantitative measures appropriate to grade 11. By the end of the year, proficiently and independently read and comprehend literature, including stories, dramas, and poetry, in a text complexity range determined by qualitative and quantitative measures appropriate to grade 12.		All reporting categories	
RI	**Reading Standards for Informational Text**			
	Key Ideas and Details			
11-12.RI.1	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.	Production of Writing: Topic Development—Purpose and Focus	Key Ideas and Details: Central Ideas, Themes, Summaries Integration of Knowledge and Ideas: Arguments	
11-12.RI.2	Determine and analyze the development and interaction of two or more central ideas over the course of a text to provide a complex analysis or objective summary.		Key Ideas and Details: Central Ideas, Themes, Summaries Integration of Knowledge and Ideas: Arguments	*Indirect association listed:* Ideas and Analysis: Purpose; Critical Elements and Differing Perspectives
11-12.RI.3	Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.		Key Ideas and Details: Relationships	
	Craft and Structure			
11-12.RI.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text.	Production of Writing: Topic Development—Purpose and Focus	Craft and Structure: Word Meanings and Word Choice; Text Structure	*Indirect association listed:* Language Use and Conventions: Enhance Meaning
11-12.RI.5	Analyze and evaluate the effectiveness of the author's choice of structural elements and text features.	Production of Writing: Organization, Unity, and Cohesion	Craft and Structure: Text Structure	*Indirect association listed:* Organization: Organizational strategy
11-12.RI.6	Determine an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the effectiveness of the text.		Craft and Structure: Purpose and Point of View	*Indirect association listed:* Language Use and Conventions: Enhance Meaning

(continued)

(continued)

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
11-12.RI.7	Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in print in order to address a question or solve a problem.		Integration of Knowledge and Ideas: Visual and Quantitative Information	*Indirect association listed:* Ideas and Analysis: Purpose; Critical Elements and Differing Perspectives Development and Support: Reasoning and Evidence Language Use and Conventions: Enhance Meaning
11-12.RI.8	Delineate and evaluate the rhetorical effectiveness of the authors' reasoning, premises, purpose, and argument in seminal U.S. and world texts.		Integration of Knowledge and Ideas: Arguments	*Indirect association listed:* All reporting categories
11-12.RI.9	Analyze foundational U.S. and world documents of historical and literary significance for their themes, purposes, and rhetorical features.			
	Range of Reading and Level of Text Complexity			
11-12.RI.10	By the end of the year, proficiently and independently read and comprehend informational text and nonfiction in a text complexity range determined by qualitative and quantitative measures appropriate to grade 11. By the end of the year, proficiently and independently read and comprehend informational text and nonfiction in a text complexity range determined by qualitative and quantitative measures appropriate to grade 12.		All reporting categories	
W	**Writing Standards**			
	Text Types and Purposes			
11-12.W.1	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.			All reporting categories
11-12.W.1.a	Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence.			Ideas and Analysis: Purpose; Critical Elements and Differing Perspectives Organization: Connecting Ideas; Organizational Strategy
11-12.W.1.b	Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases.			Development and Support: Reasoning and Evidence

(continued)

(continued)

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
11-12.W.1.c	Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.			Language Use and Conventions: Enhanced Meaning
11-12.W.1.d	Establish and maintain a style and tone appropriate to the norms and conventions of the discipline in which they are writing.			Language Use and Conventions: Conventions of Written English
11-12.W.1.e	Provide a concluding statement or section that follows from and supports the argument presented.			Organization: Connecting Ideas; Organizational Strategy
11-12.W.2.	Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.			All reporting categories
11-12.W.2.a	Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting, graphics, and multimedia when useful for comprehension.			Ideas and Analysis: Purpose; Critical Elements and Differing Perspectives Organization: Connecting Ideas; Organizational Strategy
11-12.W.2.b	Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.			Development and Support: Reasoning and Evidence
11-12.W.2.c	Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.			Organization: Connecting Ideas
11-12.W.2.d	Use precise language, domain-specific vocabulary, and rhetorical techniques to manage the complexity of the topic.			Language Use and Conventions: Enhanced Meaning
11-12.W.2.e	Establish and maintain a style and tone appropriate to the norms and conventions of the discipline in which they are writing.			Language Use and Conventions: Conventions of Written English
11-12.W.2.f	Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic)..			Organization: Connecting Ideas; Organizational Strategy
11-12.W.3	Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.			*Indirect association listed:* All reporting categories

(continued)

(continued)

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
11-12.W.3.a	Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.			
11-12.W.3.b	Use narrative techniques to develop experiences, events, and/or characters.			
11-12.W.3.c	Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and particular tone and outcome.			
11-12.W.3.d	Use precise words and phrases, relevant descriptive details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.			
11-12.W.3.e	Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.			
	Production and Distribution of Writing			
11-12.W.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	Production of Writing: Topic Development—Purpose and Focus; Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly; Style		All reporting categories
11-12.W.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grades 11–12.)	All reporting categories		All reporting categories
11-12.W.6	Use technology, including the internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.			
	Research to Build and Present Knowledge			
11-12.W.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.			

(continued)

(continued)

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
11-12.W.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.			
11-12.W.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.			
11-12.W.9.a	.Apply grades 11-12 Reading standards to literature..			
11-12.W.9.b	Apply grades 11-12 Reading standards to informational text and nonfiction.			
	Range of Writing			
11-12.W.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.			All reporting categories
SL	**Speaking and Listening Standards**	*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.*		
	Comprehension and Collaboration			
11-12.SL.1	Initiate and participate effectively in a range of collaborative discussions (one-on- one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.			*Indirect association listed:* All reporting categories
11-12.SL.1.a	Come to discussions prepared having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well- reasoned exchange of ideas.			*Indirect association listed:* All reporting categories
11-12.SL.1.b	Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.			*Indirect association listed:* All reporting categories
11-12.SL.1.c	Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.			*Indirect association listed:* All reporting categories

(continued)

(continued)

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
11-12.SL.1.d	Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.			*Indirect association listed:* All reporting categories
11-12.SL.2	Integrate multiple sources of information presented in diverse media and formats in order to make informed decisions and propose solutions, while evaluating the credibility and accuracy of each source and noting any discrepancies.			
11-12.SL.3	Evaluate a speaker's point of view, reasoning, use of evidence, and use of rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.			*Indirect association listed:* All reporting categories
	Presentation of Knowledge and Ideas			
11-12.SL.4	Present information, findings, and supporting evidence in an organized, developed style appropriate to purpose, audience, and task, allowing listeners to follow the speaker's line of reasoning, message, and any alternative perspectives.			*Indirect association listed:* All reporting categories
11-12.SL.5	Make strategic use of digital media in presentations to enhance understanding of findings, reasoning, and evidence to keep the audience engaged.			
11-12.SL.6	Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate. (See grades 11–12 Language standards 1 and 3 for specific expectations.)			*Indirect association listed:* Language Use and Conventions: Conventions of Written English
L	**Language Standards**			
	Conventions of Standard English			
11-12.L.1	Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking.	Conventions of Standard English: Sentence Structure and Formation; Usage Conventions Knowledge of Language: Expressing Ideas Clearly		Language Use and Conventions: Conventions of Written English
11-12.L.1.a	Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested.	Conventions of Standard English: Sentence Structure and Formation; Usage Conventions Knowledge of Language: Expressing Ideas Clearly		Language Use and Conventions: Conventions of Written English

(continued)

(continued)

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
11-12.L.1.b	Resolve issues of complex or contested usage, consulting references as needed.	Conventions of Standard English: Sentence Structure and Formation; Usage Conventions Knowledge of Language: Expressing Ideas Clearly		Language Use and Conventions: Conventions of Written English
11-12.L.2	Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing.	Conventions of Standard English: Punctuation Conventions		Language Use and Conventions: Conventions of Written English
11-12.L.2.a	Use hyphenation conventions.	Conventions of Standard English: Punctuation Conventions		Language Use and Conventions: Conventions of Written English
11-12.L.2.b	Use correct spelling.	Conventions of Standard English: Punctuation Conventions		Language Use and Conventions: Conventions of Written English
	Knowledge of Language			
11-12.L.3	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.	Knowledge of Language: Expressing Ideas Clearly; Style		Language Use and Conventions: Enhance Meaning
11-12.L.3.a	Vary syntax for effect, consulting references for guidance as needed; apply an understanding of syntax to the study of complex texts when reading.	Knowledge of Language: Expressing Ideas Clearly; Style		Language Use and Conventions: Enhance Meaning
	Vocabulary Acquisition and Use			
11-12.L.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11–12 reading and content, choosing flexibly from a range of strategies.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly	Craft and Structure: Word Meanings and Word Choice	
11-12.L.4.a	Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., conceive, conception, conceivable).	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly	Craft and Structure: Word Meanings and Word Choice	
11-12.L.4.b	Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly	Craft and Structure: Word Meanings and Word Choice	
11-12.L.4.c	Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly	Craft and Structure: Word Meanings and Word Choice	

(continued)

(continued)

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
11-12.L.4.d	Verify the preliminary determination of the meaning of a word or phrase.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly	Craft and Structure: Word Meanings and Word Choice	
11-12.L.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly	Craft and Structure: Word Meanings and Word Choice; Text Structure	*Indirect association listed:* Language Use and Conventions: Enhance Meaning
11-12.L.5.a	Interpret figures of speech (e.g., hyperbole, paradox) in context and analyze their role in the text.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly	Craft and Structure: Word Meanings and Word Choice; Text Structure	*Indirect association listed:* Language Use and Conventions: Enhance Meaning
11-12.L.5.b	Analyze nuances in the meaning of words with similar denotations.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly	Craft and Structure: Word Meanings and Word Choice; Text Structure	*Indirect association listed:* Language Use and Conventions: Enhance Meaning
11-12.L.6	Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.	Production of Writing: Topic Development—Purpose and Focus	Craft and Structure: Word Meanings and Word Choice Craft and Structure: Text Structure	Language Use and Conventions: Enhance Meaning

VII. Mathematics

ACT Aspire Content Description

- *Item tally and time –* The ACT Aspire mathematics test is a 48-item,* 75-minute test.
  * Total number of items includes 6 field-test items that do not contribute to score points.
- *Concept –* The test measures the whole of a student's mathematical development of topics typically taught through the early years of high school in US schools. It focuses on the prerequisite knowledge and skills important for success in college mathematics courses and career training programs.
- *Format –* 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 following reporting categories:
  - Grade-Level Progress
  - Integrating Essential Skills
  - Justification and Explanation
  - Modeling
- *Knowledge and skills tested –* The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a table below):
  - **Grade Level Progress:** 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 the real number system, including rational and irrational numbers. They reason quantitatively and use units to solve problems.
    - *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 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, and polynomial 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 circles.
        - *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.
    - **Justification and Explanation:** Students use mathematical arguments in a constructed-response format. Students justify their reasoning by using definitions and theorems, tying in calculations and diagrams, considering cases, understanding general versus specific statements, applying counterexamples, and putting statements together into coherent arguments.
    - **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.
- *Question type* – The test contains the following types of questions:
    - Multiple-choice (MC)
    - Technology-enhanced (TE)
    - Constructed-response (CR)

- *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.
- *Calculator policy –* A calculator tool is available in the online version; students are still encouraged to bring a calculator they are familiar with and can use fluently. Most four-function, scientific, or graphing calculators are permitted. Built-in computer algebra systems are not allowed, and neither are certain calculator programs or features. Please refer to the ACT website for a full description of the calculator policy.

Mathematics test blueprints. Ten scores are reported for the ACT Aspire mathematics test—a total test score based on 42 items and nine reporting category scores, which include the subcategories for Grade-Level Progress. The reporting categories constitute a specific number of items and percentage of the test, as shown below. Note that items for Justification and Explanation and for Modeling are included in the item counts in Grade-Level Progress and Integrating Essential Skills. A table describing the reporting categories in detail follows this.

Reporting Category	Number of Items	Percentage of Test (raw-score points)
Grade-Level Progress*	28	61% (31)
Number and Quantity	2–3	4-6% (2–3)
Algebra	6–7	12–14% (6–7)
Functions	5–6	10-12% (5-6)
Geometry	6–7	12–14% (6–7)
Statistics and Probability	3–4	6-8% (3–4)
Integrating Essential Skills*	14	39% (20)
Justification and Explanation	3	24% (12)
Modeling	≥ 11	≥ 22% (>11)

* The Grade-Level Progress category contains one Justification & Explanation item worth 4 raw-score points. The Integrating Essential Skills category contains two Justification and Explanation items worth 8 raw-score points.

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

The ACT Content Description

- *Item tally and time –* The ACT mathematics test is a 60-item, 60-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 –* All test items are multiple-choice. 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. A calculator is encouraged but not required.
- *Calculator policy –* Students are encouraged to bring a calculator they are familiar with and can use fluently. Most four-function, scientific, or graphing calculators are permitted. Built-in computer algebra systems are not allowed, and neither are certain calculator programs or features. Please refer to the ACT website for a full description of the calculator policy.

Mathematics test blueprints. 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 in the table below.

Reporting Category	Number of Items	Percentage of Test
Preparing for Higher Mathematics	34–36	57–60%
Number and Quantity	5–7	8–12%
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	≥ 12	≥ 20%

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

ACT Aspire Reporting Category Descriptions

Reporting Category	Skill Area	Description/Examples
Grade-Level Progress: 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.
	Quantities and Units	Reason quantitively and use units to solve problems.
Grade-Level Progress: 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

Reporting Category	Skill Area	Description/Examples
		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.
Grade-Level Progress: 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.
	Exponential and Logarithmic Functions	Model situations, perform operations, and solve problems involving exponential function.
Grade-Level Progress: 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.
	Coordinate Geometry	Model situations, perform operations, and solve problems in the coordinate plane.
	Conic Sections	Model situations, perform operations, and solve problems involving circles,
	Properties of Circles	Model situations, perform operations, and solve problems involving properties of circles.

Reporting Category	Skill Area	Description/Examples
	Geometric Measurement and Modeling	Apply geometric concepts in modeling situations.
Grade-Level Progress: Statistics and Probability	Interpret Data on a Single Count	Summarize, represent, and interpret data on a single count or measurement variable.
	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 such as the Addition rule to compute probabilities.
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.

Reporting Category	Skill Area	Description/Examples
	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.
	Basic Probability	Compute probabilities for simple events and for compound events where the sample space can be listed.
Justification and Explanation	Number and Quantity, Algebra, Functions, Geometry, Statistics and Probability, and Integrating Essential Skills	Justify reasoning by using definitions and theorems, tying in calculations and diagrams, considering cases, understanding general versus specific statements, applying counterexamples, and putting statements together into coherent arguments.
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.

Reporting Category	Skill Area	Description/Examples
	Improving	Change a model or change assumptions of a model by iterating.

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 quantitively and use units to solve problems.
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.

Reporting Category	Skill Area	Description/Examples
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.
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.

Reporting Category	Skill Area	Description/Examples
Preparing for Higher Mathematics: Statistics and Probability	Interpret Data on a Single Count	Summarize, represent, and interpret data on a single count or measurement variable.
	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.
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.

Reporting Category	Skill Area	Description/Examples
	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.
	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: ACT Aspire to Arizona Standards

ACT Aspire Aligned to Arizona Mathematics Standards — Algebra I (Adopted 2016)

	Arizona Mathematics Standards — Algebra I																														
	Number and Quantity				Algebra																			Functions								
	The Real Number System (N-RN)	Quantities ★ (N-Q)			Seeing Structure in Expressions (A-SSE)			Arithmetic with Polynomials and Rational Expressions (A-APR)		Creating Equations (A-CED)				Reasoning with Equations and Inequalities (A-REI)									Interpreting Functions (F-IF)								
	N-RN.B	N-Q			A-SSE			A-APR		A-CED				A-REI									F-IF								
ACT Aspire Mathematics Reporting Categories and Skill Areas	B.3	A.1	A.2	A.3	A.1	A.2	B.3	A.1	B.3	A.1	A.2	A.3	A.4	A.1	B.3	B.4	C.5	C.6	D.10	D.11	D.12	A.1	A.2	B.3	B.4	B.5	B.6	C.7	C.8	C.9
Grade-Level Progress																														
Number and Quantity																														
Rational and Irrational Numbers	X																													
Properties of Exponents										X																				
Vectors and Matrices																														
Complex Numbers																														
Quantities and Units		X	X	X							X																			
Algebra																														
Linear Expressions, Equations, and Inequalities					X					X	X	X	X	X	X				X	X	X				X		X	X		X
Quadratic Expressions, Equations, and Inequalities					X	X	X	X	X	X	X	X	X	X		X			X	X					X		X	X	X	X
Rational and Radical Expressions and Equations													X							X					X					
Polynomial Expressions and Equations					X	X	X	X	X		X		X							X					X					X
Systems of Equations and Inequalities						X						X					X	X		X	X									
Functions																														
Properties of Functions									X										X	X		X	X	X	X	X	X	X	X	X
Function Composition and Inverse Functions																							X							
Sequences and Series																								X						
Trigonometric Functions																														
Exponential and Logarithmic Functions																														X

(continued)

(continued)

	Arizona Mathematics Standards — Algebra I																										
	Number and Quantity				Algebra																	Functions								
	The Real Number System (N-RN)	Quantities ★ (N-Q)			Seeing Structure in Expressions (A-SSE)			Arithmetic with Polynomials and Rational Expressions (A-APR)		Creating Equations (A-CED)				Reasoning with Equations and Inequalities (A-REI)								Interpreting Functions (F-IF)								
	N-RN.B	N-Q			A-SSE			A-APR		A-CED				A-REI								F-IF								
ACT Aspire Mathematics Reporting Categories and Skill Areas	B.3	A.1	A.2	A.3	A.1	A.2	B.3	A.1	B.3	A.1	A.2	A.3	A.4	A.1	B.3	B.4	C.5	C.6	D.10	D.11	D.12	A.1	A.2	B.3	B.4	B.5	B.6	C.7	C.8	C.9
Geometry																														
Transformations																														
Proof, Reasoning, and Constructions																														
Similarity, Right Triangles, and Trigonometry																														
Coordinate Geometry																			X						X		X	X		
Conic Sections																														
Properties of Circles																														
Geometric Measuring and Modeling																														
Statistics and Probability																														
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																	X			
Ratio, Proportion, and Percentage																														
Writing Algebraic Expressions						X																								
Writing and Solving Simple Equations and Inequalities															X		X	X												
Perimeter, Circumference, and Area																														
Surface Area and Volume																														
Measurement Units and Unit Conversion		X																												
Properties of Lines, Angles, and Shapes																														

(continued)

(continued)

	Arizona Mathematics Standards — Algebra I																														
	Number and Quantity				Algebra																			Functions								
	The Real Number System (N-RN)	Quantities ★ (N-Q)			Seeing Structure in Expressions (A-SSE)			Arithmetic with Polynomials and Rational Expressions (A-APR)		Creating Equations (A-CED)				Reasoning with Equations and Inequalities (A-REI)										Interpreting Functions (F-IF)								
	N-RN.B	N-Q			A-SSE			A-APR		A-CED				A-REI										F-IF								
ACT Aspire Mathematics Reporting Categories and Skill Areas	B.3	A.1	A.2	A.3	A.1	A.2	B.3	A.1	B.3	A.1	A.2	A.3	A.4	A.1	B.3	B.4	C.5	C.6	D.10	D.11	D.12	A.1	A.2	B.3	B.4	B.5	B.6	C.7	C.8	C.9	
Pythagorean Theorem																															
Scatterplots and Association																															
Data Summary and Displays		X																													
Basic Probability																															
Modeling																															
Producing										X								X												
Interpreting					X	X	X											X												
Understanding																															
Evaluating																															
Improving																															

(continued)

(continued)

ACT Aspire Mathematics Reporting Categories and Skill Areas	Arizona Mathematics Standards — Algebra I																							
	Functions (continued)						Statistics and Probability										Standards for Mathematical Practice (MP)							
	Building Functions (F-BF)		Linear, Quadratic, and Exponential Models ★ (F-LE)				Summarize, represent, and interpret data on a single count or measurement variable. (S-ID)								Conditional Probability and the Rules of Probability (S-CP)									
	F-BF		F-LE				S-ID								S-CP		A-MP							
	A.1	B.3	A.1	A.2	A.3	B.5	A.1	A.2	A.3	B.5	B.6	C.7	C.8	C.9	A.1	A.2	1	2	3	4	5	6	7	8
Grade-Level Progress																								
Number and Quantity																								
Rational and Irrational Numbers																								
Properties of Exponents																								
Vectors and Matrices																								
Complex Numbers																								
Quantities and Units																								
Algebra																								
Linear Expressions, Equations, and Inequalities	X	X	X	X	X	X																		
Quadratic Expressions, Equations, and Inequalities	X	X	X		X																			
Rational and Radical Expressions and Equations		X																						
Polynomial Expressions and Equations	X	X																						
Systems of Equations and Inequalities																								
Functions																								
Properties of Functions	X	X	X	X	X	X					X	X												
Function Composition and Inverse Functions		X																						
Sequences and Series	X			X																				
Trigonometric Functions																								
Exponential and Logarithmic Functions	X	X	X	X	X	X																		

(continued)

(continued)

	Arizona Mathematics Standards — Algebra I																							
	Functions (continued)						Statistics and Probability										Standards for Mathematical Practice (MP)							
	Building Functions (F-BF)		Linear, Quadratic, and Exponential Models ★ (F-LE)				Summarize, represent, and interpret data on a single count or measurement variable. (S-ID)								Conditional Probability and the Rules of Probability (S-CP)									
	F-BF		F-LE				S-ID								S-CP		A-MP							
ACT Aspire Mathematics Reporting Categories and Skill Areas	A.1	B.3	A.1	A.2	A.3	B.5	A.1	A.2	A.3	B.5	B.6	C.7	C.8	C.9	A.1	A.2	1	2	3	4	5	6	7	8
Geometry																								
Transformations																								
Proof, Reasoning, and Constructions																								
Similarity, Right Triangles, and Trigonometry																								
Coordinate Geometry		X																						
Conic Sections																								
Properties of Circles																								
Geometric Measuring and Modeling																								
Statistics and Probability																								
Interpret Data on a Single Count							X																	
Interpret Data on Two Counts										X	X	X												
Making Inferences from Experiments and Surveys								X	X	X				X										
Rules of Probability															X	X								
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																								

(continued)

(continued)

	Arizona Mathematics Standards — Algebra I																						
	Functions (continued)						Statistics and Probability									Standards for Mathematical Practice (MP)							
	Building Functions (F-BF)		Linear, Quadratic, and Exponential Models ★ (F-LE)				Summarize, represent, and interpret data on a single count or measurement variable. (S-ID)								Conditional Probability and the Rules of Probability (S-CP)								
	F-BF		F-LE				S-ID								S-CP		A-MP						
ACT Aspire Mathematics Reporting Categories and Skill Areas	A.1	B.3	A.1	A.2	A.3	B.5	A.1	A.2	A.3	B.5	B.6	C.7	C.8	C.9	A.1	A.2	1	2	3	4	5	6	7	8
Integrating Essential Skills																								
Pythagorean Theorem																								
Scatterplots and Association							X			X	X	X												
Data Summary and Displays							X	X	X															
Basic Probability															X	X								
Modeling																								
Producing			X	X													X	X	X	X	X			
Interpreting			X	X		X											X	X	X	X		X	X	
Understanding																	X		X	X	X	X	X	X
Evaluating																	X			X	X		X	X
Improving																				X				

CROSSWALK: Arizona Standards to ACT Aspire

Arizona Mathematics Standards — Algebra I (Adopted 2016) Aligned to the ACT

Arizona Mathematics Standards — Algebra I		ACT Aspire Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
N	**Number and Quantity**	
R-N	**The Real Number System**	
A1.N-RN.B	Use properties of rational and irrational numbers.	
A1.N-RN.B.3	Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.	Number and Quantity: Rational and Irrational Numbers Integrating Essential Skills: Properties of Real Numbers
N-Q	**Quantities**	
A1.N-Q.A	Reason quantitatively and use units to solve problems.	
A1.N-Q.A.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays, include utilizing real-world context.	Number and Quantity: Quantities and Units Integrating Essential Skills: Measurement Units and Unit Conversion; Data Summary and Displays; Computation and Problem-Solving with Real Numbers
A1.N-Q.A.2	Define appropriate quantities for the purpose of descriptive modeling. Include problem-solving opportunities utilizing real-world context.	Number and Quantity: Quantities and Units Integrating Essential Skills: Computation and Problem-Solving with Real Numbers
A1.N-Q.A.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities utilizing real-world context.	Number and Quantity: Quantities and Units Integrating Essential Skills: Computation and Problem-Solving with Real Numbers
A	**Algebra**	
A-SSE	**Seeing Structures in Expressions**	
A1.A-SSE.A	Interpret the structure of expressions.	
A1.A-SSE.A.1	Interpret expressions that represent a quantity in terms of its context.	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities; Polynomial Expressions and Equations; Systems of equations and inequalities Modeling: Interpreting
A1.A-SSE.A.1.a	Interpret parts of an expression, such as terms, factors, and coefficients.	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities; Polynomial Expressions and Equations; Systems of equations and inequalities Modeling: Interpreting
A1.A-SSE.A.1.b	Interpret expressions by viewing one or more of their parts as a single entity.	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities; Polynomial Expressions and Equations; Systems of Equations and Inequalities Modeling: Interpreting

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		ACT Aspire Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.A-SSE.A.2	Use structure to identify ways to rewrite numerical and polynomial expressions. Focus on polynomial multiplication and factoring patterns.	Algebra: Polynomial Expressions and Equations; Quadratic Expressions, Equations, and Inequalities Modeling: Interpreting
A1.A-SSE.B	**Write expressions in equivalent forms to solve problems.**	
A1.A-SSE.B.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	Algebra: Polynomial Expressions and Equations; Quadratic Expressions, Equations, and Inequalities Modeling: Interpreting
A1.A-SSE.B.3.a	Factor a quadratic expression to reveal the zeros of the function it defines.	Algebra: Polynomial Expressions and Equations; Quadratic Expressions, Equations, and Inequalities Modeling: Interpreting
A1.A-SSE.B.3.b	Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	Algebra: Polynomial Expressions and Equations; Quadratic Expressions, Equations, and Inequalities Modeling: Interpreting
A-APR	**Arithmetic with Polynomials and Rational Expressions**	
A1.A-APR.A	**Perform arithmetic operations on polynomials.**	
A1.A-APR.A.1	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	Algebra: Polynomial Expressions and Equations; Quadratic Expressions, Equations, and Inequalities
A1.A-APR.B	**Understand the relationship between zeros and factors of polynomials.**	
A1.A-APR.B.3	Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial. Focus on quadratic and cubic polynomials in which linear and quadratic factors are available.	Algebra: Polynomial Expressions and Equations; Quadratic Expressions, Equations, and Inequalities Functions: Properties of Functions
A-CED	**Creating Equations**	
A1.A-CED.A	**Create equations that describe numbers or relationships.**	
A1.A-CED.A.1	Create equations and inequalities in one variable and use them to solve problems. Include problem-solving opportunities utilizing real-world context. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities Number and Quantity: Properties of Exponents Modeling: Producing Integrating Essential Skills: Computation and Problem-Solving with Real Numbers
A1.A-CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities; Polynomial Expressions and Equations Functions: Exponential and Logarithmic Functions Number and Quantity: Quantities and Units

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		ACT Aspire Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.A-CED.A.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.	Algebra: Quadratic Expressions, Equations, and Inequalities; Linear Expressions, Equations, and Inequalities; Systems of Equations and inequalities
A1.A-CED.A.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities; Rational and Radical Expressions and Equations; Polynomial Expressions and Equations
A-REI	**Reasoning with Equations and Inequalities**	
A1.A-REI.A	**Understand solving equations as a process of reasoning and explain the reasoning.**	
A1.A-REI.A.1	Explain each step in solving linear and quadratic equations as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities
A1.REI.B	**Solve equations and inequalities in one variable.**	
A1.A-REI.B.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Algebra: Linear Expressions, Equations, and Inequalities Integrating Essential Skills: Writing and Solving Simple Equations and Inequalities
A1.A-REI.B.4	Solve quadratic equations in one variable.	Algebra: Quadratic Expressions, Equations, and Inequalities
A1.A-REI.B.4.a	Use the method of completing the square to transform any quadratic equation in x into an equation of the form (x – k)2 = q that has the same solutions. Derive the quadratic formula from this form.	Algebra: Quadratic Expressions, Equations, and Inequalities
A1.A-REI.B.4.b	Solve quadratic equations by inspection (e.g., x2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Focus on solutions for quadratic equations that have real roots. Include cases that recognize when a quadratic equation has no real solutions.	Algebra: Quadratic Expressions, Equations, and Inequalities
A1.A-REI.C	**Solve systems of equations.**	
A1.A-REI.C.5	Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	Algebra: Systems of Equations and Inequalities Integrating Essential Skills: Writing and Solving Simple Equations and Inequalities
A1.A-REI.C.6	Solve systems of linear equations exactly and approximately, focusing on pairs of linear equations in two variables. Include problem solving opportunities utilizing real-world context.	Algebra: Systems of Equations and Inequalities Integrating Essential Skills: Writing and Solving Simple Equations and Inequalities Modeling: Producing; Interpreting

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		ACT Aspire Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.A-REI.D	Represent and solve equations and inequalities graphically.	
A1.A-REI.D.10	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve, which could be a line.	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities Functions: Properties of Functions Geometry: Coordinate Geometry
A1.A-REI.D.11	Explain why the x-coordinates of the points where the graphs of the equations y=f(x) and y=g(x) intersect are the solutions of the equation f(x) =g(x); find the solutions approximately (e.g., using technology to graph the functions, make tables of values, or find successive approximations). Focus on cases where f(x) and/or g(x) are linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	Algebra: Systems of Equations and Inequalities; Linear Expressions, Equations, and Inequalities; Rational and Radical Expressions and Equations; Polynomial Expressions and Equations; Quadratic Expressions, Equations, and Inequalities Functions: Properties of Functions
A1.A-REI.D.12	Graph the solutions to a linear inequality in two variables as a half-plane, excluding the boundary in the case of a strict inequality, and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	Algebra: Systems of Equations and Inequalities; Linear Expressions, Equations, and Inequalities
F	**Functions**	
F-IF	**Interpreting Functions**	
A1.F-IF.A	**Understand the concept of a function and use function notation.**	
A1.F-IF.A.1	Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).	Functions: Properties of Functions
A1.F-IF.A.2	Evaluate a function for inputs in the domain, and interpret statements that use function notation in terms of a context.	Functions: Properties of Functions; Function Composition and Inverse Functions
A1.F-IF.A.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.	Functions: Properties of Functions; Sequences and Series

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		ACT Aspire Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.F-IF.B	**Interpret functions that arise in applications in terms of the context**	
A1.F-IF.B.4	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Include problem-solving opportunities utilizing real-world context. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	Functions: Properties of Functions Geometry: Coordinate Geometry Algebra: Linear Expressions, Equations, and Inequalities; Rational and Radical Expressions and Equations; Polynomial Expressions and Equations; Quadratic Expressions, Equations, and Inequalities
A1.F-IF.B.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.	Functions: Properties of Functions
A1.F-IF.B.6	Calculate and interpret the average rate of change of a continuous function (presented symbolically or as a table) on a closed interval. Estimate the rate of change from a graph. Include problem-solving opportunities utilizing real-world context. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	Functions: Properties of Functions Geometry: Coordinate Geometry Integrating Essential Skills: Computation and Problem-Solving with Real Numbers Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities
A1.F-IF.C	**Analyze functions using different representations.**	
A1.F-IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	Functions: Properties of Functions Geometry: Coordinate Geometry Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities
A1.F-IF.C.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	Functions: Properties of Functions Algebra: Quadratic Expressions, Equations, and Inequalities
A1.F-IF.C.8.a	Use the process of factoring and completing the square of a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.	Functions: Properties of Functions Algebra: Quadratic Expressions, Equations, and Inequalities
A1.F-IF.C.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities; Polynomial Expressions and Equations; Quadratic Expressions, Equations, and Inequalities

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		ACT Aspire Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
F-BF	**Building Functions**	
A1.F-BF.A	Build a function that models a relationship between two quantities.	
A1.F-BF.A.1	Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from real-world context. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	Functions: Properties of Functions; Exponential and Logarithmic Functions; Sequences and Series Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities; Polynomial Expressions and Equations
A1.F-BF.B	**Build new functions from existing functions.**	
A1.F-BF.B.3	Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), and f(x+k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	Functions: Properties of Functions; Exponential and Logarithmic Functions; Function Composition and Inverse Functions Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities; Polynomial Expressions and Equations; Rational and Radical Expressions and Equations Geometry: Coordinate Geometry
F-LE	**Linear, Quadratic, and Exponential Models**	
A1.F-LE.A	Construct and compare linear, quadratic, and exponential models and solve problems.	
A1.F-LE.A.1	Distinguish between situations that can be modeled with linear functions and with exponential functions.	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities Modeling: Producing; Interpreting
A1.F-LE.A.1.a	Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities Modeling: Producing; Interpreting
A1.F-LE.A.1.b	Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities Modeling: Producing; Interpreting
A1.F-LE.A.1.c	Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities Modeling: Producing; Interpreting
A1.F-LE.A.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or input/output pairs.	Functions: Properties of Functions; Exponential and Logarithmic Functions; Sequences and Series Algebra: Linear Expressions, Equations, and Inequalities Modeling: Producing; Interpreting
A1.F-LE.A.3	Observe, using graphs and tables, that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically.	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities

(continued)

(continued)

Arizona Mathematics Standards -- Algebra I		ACT Aspire Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.F-LE.B	**Interpret expressions for functions in terms of the situation they model.**	
A1.F-LE.B.5	Interpret the parameters in a linear or exponential function with integer exponents utilizing real world context.	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities Modeling: Interpreting
S	**Statistics and Probability**	
S-ID	**Summarize, represent, and interpret data on a single count or measurement variable.**	
A1.S-ID.A	Summarize, represent, and interpret data on a single count or measurement variable.	
A1.S-ID.A.1	Represent real-value data with plots for the purpose of comparing two or more data sets.	Statistics and Probability: Interpret Data on a Single Count Integrating Essential Skills: Scatterplots and Association; Data Summary and Displays
A1.S-ID.A.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	Statistics and Probability: Interpret Data on a Single Count; Making Inferences from Experiments and Surveys Integrating Essential Skills: Data Summary and Displays
A1.S-ID.A.3	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of outliers if present.	Statistics and Probability: Interpret Data on a Single Count; Making Inferences from Experiments and Surveys Integrating Essential Skills: Data Summary and Displays
A1.S-ID.B	Summarize, represent, and interpret data on two categorical and quantitative variables.	
A1.S-ID.B.5	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data, including joint, marginal, and conditional relative frequencies. Recognize possible associations and trends in the data.	Statistics and Probability: Interpret Data on Two Counts; Making Inferences from Experiments and Surveys Integrating Essential Skills: Scatterplots and Association
A1.S-ID.B.6	Represent data on two quantitative variables on a scatter plot, and describe how the quantities are related.	Statistics and Probability: Interpret Data on Two Counts Integrating Essential Skills: Scatterplots and Association Functions: Properties of Functions
A1.S-ID.B.6.a	Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Focus on linear models.	Statistics and Probability: Interpret Data on Two Counts Integrating Essential Skills: Scatterplots and Association Functions: Properties of Functions
A1.S-ID.B.6.b	Informally assess the fit of a function by plotting and analyzing residuals.	Statistics and Probability: Interpret Data on Two Counts Integrating Essential Skills: Scatterplots and Association Functions: Properties of Functions
A1.S-ID.C	Interpret linear models.	
A1.S-ID.C.7	Interpret the slope as a rate of change and the constant term of a linear model in the context of the data.	Statistics and Probability: Interpret Data on Two Counts Integrating Essential Skills: Scatterplots and Association Functions: Properties of Functions
A1.S-ID.C.8	Compute and interpret the correlation coefficient of a linear relationship.	

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		ACT Aspire Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.S-ID.C.9	Distinguish between correlation and causation.	Statistics and Probability: Interpret Data on Two Counts; Making Inferences from Experiments and Surveys Integrating Essential Skills: Scatterplots and Association
S-CP	**Conditional Probability and the rules of Probability**	
A1.S-CP.A	Understand independence and conditional probability and use them to interpret data.	
A1.S-CP.A.1	Describe events as subsets of a sample space using characteristics of the outcomes, or as unions, intersections, or complements of other events.	Statistics and Probability: Rules of Probability Integrating Essential Skills: Basic Probability
A1.S-CP.A.2	Use the Multiplication Rule for independent events to understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.	Statistics and Probability: Rules of Probability Integrating Essential Skills: Basic Probability
MP	**Standards for Mathematical Practice**	
A1.MP.1	Make sense of problems and persevere in solving them. Mathematically proficient students explain to themselves the meaning of a problem, look for entry points to begin work on the problem, and plan and choose a solution pathway. While engaging in productive struggle to solve a problem, they continually ask themselves, “Does this make sense?" to monitor and evaluate their progress and change course if necessary. Once they have a solution, they look back at the problem to determine if the solution is reasonable and accurate. Mathematically proficient students check their solutions to problems using different methods, approaches, or representations. They also compare and understand different representations of problems and different solution pathways, both their own and those of others.	Modeling: Producing; Interpreting; Understanding; Evaluating

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		ACT Aspire Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.MP.2	Reason abstractly and quantitatively. Mathematically proficient students make sense of quantities and their relationships in problem situations. Students can contextualize and decontextualize problems involving quantitative relationships. They contextualize quantities, operations, and expressions by describing a corresponding situation. They decontextualize a situation by representing it symbolically. As they manipulate the symbols, they can pause as needed to access the meaning of the numbers, the units, and the operations that the symbols represent. Mathematically proficient students know and flexibly use different properties of operations, numbers, and geometric objects and when appropriate they interpret their solution in terms of the context.	Modeling: Producing; Interpreting
A1.MP.3	Construct viable arguments and critique the reasoning of others. Mathematically proficient students construct mathematical arguments (explain the reasoning underlying a strategy, solution, or conjecture) using concrete, pictorial, or symbolic referents. Arguments may also rely on definitions, assumptions, previously established results, properties, or structures. Mathematically proficient students make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. Mathematically proficient students present their arguments in the form of representations, actions on those representations, and explanations in words (oral or written). Students critique others by affirming or questioning the reasoning of others. They can listen to or read the reasoning of others, decide whether it makes sense, ask questions to clarify or improve the reasoning, and validate or build on it. Mathematically proficient students can communicate their arguments, compare them to others, and reconsider their own arguments in response to the critiques of others.	Modeling: Producing; Interpreting; Understanding

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		ACT Aspire Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.MP.4	Model with mathematics. Mathematically proficient students apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. When given a problem in a contextual situation, they identify the mathematical elements of a situation and create a mathematical model that represents those mathematical elements and the relationships among them. Mathematically proficient students use their model to analyze the relationships and draw conclusions. They interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.	Modeling: Producing; Interpreting; Understanding; Evaluating; Improving
A1.MP.5	Use appropriate tools strategically. Mathematically proficient students consider available tools when solving a mathematical problem. They choose tools that are relevant and useful to the problem at hand. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful; recognizing both the insight to be gained and their limitations. Students deepen their understanding of mathematical concepts when using tools to visualize, explore, compare, communicate, make and test predictions, and understand the thinking of others.	Modeling: Producing; Understanding; Evaluating
A1.MP.6	Attend to precision. Mathematically proficient students clearly communicate to others using appropriate mathematical terminology, and craft explanations that convey their reasoning. When making mathematical arguments about a solution, strategy, or conjecture, they describe mathematical relationships and connect their words clearly to their representations. Mathematically proficient students understand meanings of symbols used in mathematics, calculate accurately and efficiently, label quantities appropriately, and record their work clearly and concisely.	Modeling: Interpreting; Understanding

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		ACT Aspire Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.MP.7	Look for and make use of structure. Mathematically proficient students use structure and patterns to assist in making connections among mathematical ideas or concepts when making sense of mathematics. Students recognize and apply general mathematical rules to complex situations. They are able to compose and decompose mathematical ideas and notations into familiar relationships. Mathematically proficient students manage their own progress, stepping back for an overview and shifting perspective when needed.	Modeling: Producing; Understanding; Evaluating
A1.MP.8	Look for and express regularity in repeated reasoning. Mathematically proficient students look for and describe regularities as they solve multiple related problems. They formulate conjectures about what they notice and communicate observations with precision. While solving problems, students maintain oversight of the process and continually evaluate the reasonableness of their results. This informs and strengthens their understanding of the structure of mathematics which leads to fluency.	Modeling: Understanding; Evaluating

MATRIX: The ACT to Arizona Standards

The ACT Aligned to Arizona Mathematics Standards, Algebra I (Adopted 2016)

	Arizona Mathematics Standards — Algebra I																												
	Number and Quantity				Algebra																			Functions						
	The Real Number System (N-RN)	Quantities ★ (N-Q)			Seeing Structure in Expressions (A-SSE)			Arithmetic with Polynomials and Rational Expressions (A-APR)		Creating Equations (A-CED)				Reasoning with Equations and Inequalities (A-REI)									Interpreting Functions (F-IF)							
	N-RN.B	N-Q			A-SSE			A-APR		A-CED				A-REI									F-IF							
The ACT Mathematics Reporting Categories and Skill Areas	B.3	A.1	A.2	A.3	A.1	A.2	B.3	A.1	B.3	A.1	A.2	A.3	A.4	A.1	B.3	B.4	C.5	C.6	D.10	D.11	D.12	A.1	A.2	B.3	B.4	B.5	B.6	C.7	C.8	C.9
Preparing for Higher Mathematics																														
Number and Quantity																														
Rational and Irrational Numbers	X																													
Properties of Exponents																														
Vectors and Matrices																														
Complex Numbers																														
Quantities and Units		X	X	X																										
Algebra																														
Linear Expressions, Equations, and Inequalities					X		X			X	X	X	X	X	X				X	X	X				X		X	X		X
Quadratic Expressions, Equations, and Inequalities					X	X	X	X	X	X	X		X	X		X			X						X		X	X	X	X
Rational and Radical Expressions and Equations																														
Polynomial Expressions and Equations					X	X		X	X																					
Systems of Equations and Inequalities												X					X	X		X	X									
Functions																														
Properties of Functions																				X		X	X		X	X	X	X	X	X
Function Composition and Inverse Functions																														
Sequences and Series																								X						
Trigonometric Functions																														
Exponential and Logarithmic Functions										X	X														X		X	X	X	X

(continued)

(continued)

	Arizona Mathematics Standards — Algebra I																														
	Number and Quantity				Algebra																			Functions								
	The Real Number System (N-RN)	Quantities ★ (N-Q)			Seeing Structure in Expressions (A-SSE)			Arithmetic with Polynomials and Rational Expressions (A-APR)		Creating Equations (A-CED)				Reasoning with Equations and Inequalities (A-REI)										Interpreting Functions (F-IF)								
	N-RN.B	N-Q			A-SSE			A-APR		A-CED				A-REI										F-IF								
The ACT Mathematics Reporting Categories and Skill Areas	B.3	A.1	A.2	A.3	A.1	A.2	B.3	A.1	B.3	A.1	A.2	A.3	A.4	A.1	B.3	B.4	C.5	C.6	D.10	D.11	D.12	A.1	A.2	B.3	B.4	B.5	B.6	C.7	C.8	C.9
Geometry																															
Transformations																															
Proof, Reasoning, and Constructions																															
Similarity, Right Triangles, and Trigonometry																															
Coordinate Geometry																															
Conic Sections																															
Properties of Circles																															
Geometric Measuring and Modeling																															
Statistics and Probability																															
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																															
Computation and Problem-Solving with Real Numbers		X	X	X																											
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		X																													

(continued)

(continued)

	Arizona Mathematics Standards — Algebra I																													
	Number and Quantity				Algebra																		Functions							
	The Real Number System (N-RN)	Quantities ★ (N-Q)			Seeing Structure in Expressions (A-SSE)			Arithmetic with Polynomials and Rational Expressions (A-APR)		Creating Equations (A-CED)				Reasoning with Equations and Inequalities (A-REI)									Interpreting Functions (F-IF)								
	N-RN.B	N-Q			A-SSE			A-APR		A-CED				A-REI									F-IF								
The ACT Mathematics Reporting Categories and Skill Areas	B.3	A.1	A.2	A.3	A.1	A.2	B.3	A.1	B.3	A.1	A.2	A.3	A.4	A.1	B.3	B.4	C.5	C.6	D.10	D.11	D.12	A.1	A.2	B.3	B.4	B.5	B.6	C.7	C.8	C.9
Properties of Lines, Angles, and Shapes																														
Pythagorean Theorem																														
Scatterplots and Association																														
Data Summary and Displays																														
Basic Probability																														
Modeling																														
Producing																														
Interpreting																														
Understanding																														
Evaluating																														
Improving																														

(continued)

(continued)

The ACT Mathematics Reporting Categories and Skill Areas	Arizona Mathematics Standards — Algebra I																							
	Functions (continued)						Statistics and Probability								Standards for Mathematical Practice (MP)									
	Building Functions (F-BF)		Linear, Quadratic, and Exponential Models ★ (F-LE)				Summarize, represent, and interpret data on a single count or measurement variable. (S-ID)								Conditional Probability and the Rules of Probability (S-CP)									
	F-BF		F-LE				S-ID								S-CP		A-MP							
	A.1	B.3	A.1	A.2	A.3	B.5	A.1	A.2	A.3	B.5	B.6	C.7	C.8	C.9	A.1	A.2	1	2	3	4	5	6	7	8
Preparing for Higher Mathematics																								
Number and Quantity																								
Rational and Irrational Numbers																								
Properties of Exponents																								
Vectors and Matrices																								
Complex Numbers																								
Quantities and Units																								
Algebra																								
Linear Expressions, Equations, and Inequalities	X	X	X	X	X	X																		
Quadratic Expressions, Equations, and Inequalities	X	X		X	X																			
Rational and Radical Expressions and Equations																								
Polynomial Expressions and Equations																								
Systems of Equations and Inequalities																								
Functions																								
Properties of Functions	X	X	X	X	X	X																		
Function Composition and Inverse Functions																								
Sequences and Series																								
Trigonometric Functions																								
Exponential and Logarithmic Functions	X	X	X	X	X	X																		

(continued)

(continued)

The ACT Mathematics Reporting Categories and Skill Areas	Arizona Mathematics Standards — Algebra I																							
	Functions (continued)						Statistics and Probability								Standards for Mathematical Practice (MP)									
	Building Functions (F-BF)		Linear, Quadratic, and Exponential Models ★ (F-LE)				Summarize, represent, and interpret data on a single count or measurement variable. (S-ID)								Conditional Probability and the Rules of Probability (S-CP)									
	F-BF		F-LE				S-ID								S-CP		A-MP							
	A.1	B.3	A.1	A.2	A.3	B.5	A.1	A.2	A.3	B.5	B.6	C.7	C.8	C.9	A.1	A.2	1	2	3	4	5	6	7	8
Geometry																								
Transformations																								
Proof, Reasoning, and Constructions																								
Similarity, Right Triangles, and Trigonometry																								
Coordinate Geometry																								
Conic Sections																								
Properties of Circles																								
Geometric Measuring and Modeling																								
Statistics and Probability																								
Interpret Data on a Single Count							X	X	X															
Interpret Data on Two Counts										X	X	X	X	X										
Making Inferences from Experiments and Surveys																								
Rules of Probability															X	X								
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																								

(continued)

(continued)

	Arizona Mathematics Standards — Algebra I																						
	Functions (continued)						Statistics and Probability								Standards for Mathematical Practice (MP)								
	Building Functions (F-BF)		Linear, Quadratic, and Exponential Models ★ (F-LE)				Summarize, represent, and interpret data on a single count or measurement variable. (S-ID)								Conditional Probability and the Rules of Probability (S-CP)								
	F-BF		F-LE				S-ID								S-CP		A-MP						
The ACT Mathematics Reporting Categories and Skill Areas	**A.1**	**B.3**	**A.1**	**A.2**	**A.3**	**B.5**	**A.1**	**A.2**	**A.3**	**B.5**	**B.6**	**C.7**	**C.8**	**C.9**	**A.1**	**A.2**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Integrating Essential Skills																								
Pythagorean Theorem																								
Scatterplots and Association										X	X	X	X	X										
Data Summary and Displays							X	X	X															
Basic Probability															X	X								
Modeling																								
Producing																	X	X	X	X	X		X	
Interpreting																	X	X	X	X		X		
Understanding																	X		X	X	X	X	X	X
Evaluating																	X			X	X		X	X
Improving																				X				

The ACT Aligned to Arizona Mathematics Standards — Geometry (Adopted 2016)

	Arizona Standards — Geometry																								
	Number and Quantity			Geometry																					
	Quantities ★ (GN-Q)			Congruence (G-CO)															Similarity, Right Triangles, and Trigonometry (G-SRT)							
	GN-Q			G-CO															G-SRT							
The ACT Mathematics Reporting Categories and Skill Areas	A.1	A.2	A.3	A.1	A.2	A.3	A.4	A.5	B.6	B.7	B.8	C.9	C.10	C.11	D.12	D.13	A.1	A.2	A.3	B.4	B.5	C.6	C.7	C.8
Preparing for Higher Mathematics																								
Number and Quantity																								
Rational and Irrational Numbers																								
Properties of Exponents																								
Vectors and Matrices																								
Complex Numbers																								
Quantities and Units																								
Algebra																								
Linear Expressions, Equations, and Inequalities																								
Quadratic Expressions, Equations, and Inequalities																								
Rational and Radical Expressions and Equations																								
Polynomial Expressions and Equations																								
Systems of Equations and Inequalities																								
Functions																								
Properties of Functions																								
Function Composition and Inverse Functions																								
Sequences and Series																								
Trigonometric Functions																								
Exponential and Logarithmic Functions																								
Geometry																								
Transformations					X	X	X	X	X	X	X						X	X						
Proof, Reasoning, and Constructions									X	X	X	X	X	X	X	X			X	X	X			
Similarity, Right Triangles, and Trigonometry																	X	X	X	X	X	X	X	X
Coordinate Geometry				X	X	X	X	X																

(continued)

(continued)

	Arizona Standards — Geometry																								
	Number and Quantity			Geometry																					
	Quantities ★ (GN-Q)			Congruence (G-CO)														Similarity, Right Triangles, and Trigonometry (G-SRT)							
	GN-Q			G-CO														G-SRT							
The ACT Mathematics Reporting Categories and Skill Areas	**A.1**	**A.2**	**A.3**	**A.1**	**A.2**	**A.3**	**A.4**	**A.5**	**B.6**	**B.7**	**B.8**	**C.9**	**C.10**	**C.11**	**D.12**	**D.13**	**A.1**	**A.2**	**A.3**	**B.4**	**B.5**	**C.6**	**C.7**	**C.8**
Conic Sections																								
Properties of Circles																								
Geometric Measuring and Modeling	X	X	X																					
Statistics and Probability																								
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																								
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	X			X									X	X										
Pythagorean Theorem																								X
Scatterplots and Association																								
Data Summary and Displays																								
Basic Probability																								

(continued)

(continued)

	Arizona Standards — Geometry																							
	Number and Quantity			Geometry																				
	Quantities ★ (GN-Q)			Congruence (G-CO)														Similarity, Right Triangles, and Trigonometry (G-SRT)							
	GN-Q			G-CO														G-SRT							
The ACT Mathematics Reporting Categories and Skill Areas	A.1	A.2	A.3	A.1	A.2	A.3	A.4	A.5	B.6	B.7	B.8	C.9	C.10	C.11	D.12	D.13	A.1	A.2	A.3	B.4	B.5	C.6	C.7	C.8
Modeling																								
Producing																								
Interpreting																								
Understanding																								
Evaluating																								
Improving																								

(continued)

(continued)

The ACT Mathematics Reporting Categories and Skill Areas	Arizona Standards — Geometry																			
	Geometry												Standards for Mathematical Practice (MP)							
	Circles (G-C)				Expressing Geometric Properties with Equations (G-GPE)					Geometric Measurement and Dimension (G-GMD)										
	G-C				G-GPE					G-GMD			G-MP							
	A.1	A.2	A.3	B5	A.1	B.4	B.5	B.6	B.7	A.1	A.2	A.3	1	2	3	4	5	6	7	8
Preparing for Higher Mathematics																				
Number and Quantity																				
Rational and Irrational Numbers																				
Properties of Exponents																				
Vectors and Matrices																				
Complex Numbers																				
Quantities and Units																				
Algebra																				
Linear Expressions, Equations, and Inequalities																				
Quadratic Expressions, Equations, and Inequalities																				
Rational and Radical Expressions and Equations																				
Polynomial Expressions and Equations																				
Systems of Equations and Inequalities																				
Functions																				
Properties of Functions																				
Function Composition and Inverse Functions																				
Sequences and Series																				
Trigonometric Functions																				
Exponential and Logarithmic Functions																				
Geometry																				
Transformations																				
Proof, Reasoning, and Constructions						X	X													
Similarity, Right Triangles, and Trigonometry																				
Coordinate Geometry						X	X	X	X											
Conic Sections					X															

(continued)

(continued)

	Arizona Standards — Geometry																			
	Geometry												Standards for Mathematical Practice (MP)							
	Circles (G-C)				Expressing Geometric Properties with Equations (G-GPE)					Geometric Measurement and Dimension (G-GMD)										
	G-C				G-GPE					G-GMD			G-MP							
The ACT Mathematics Reporting Categories and Skill Areas	**A.1**	**A.2**	**A.3**	**B5**	**A.1**	**B.4**	**B.5**	**B.6**	**B.7**	**A.1**	**A.2**	**A.3**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Properties of Circles	X	X	X	X																
Geometric Measuring and Modeling										X	X	X								
Statistics and Probability																				
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																				
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									X											
Surface Area and Volume											X									
Measurement Units and Unit Conversion										X										
Properties of Lines, Angles, and Shapes																				
Pythagorean Theorem					X															
Scatterplots and Association																				
Data Summary and Displays																				
Basic Probability																				

(continued)

(continued)

	Arizona Standards — Geometry																			
	Geometry												Standards for Mathematical Practice (MP)							
	Circles (G-C)				Expressing Geometric Properties with Equations (G-GPE)					Geometric Measurement and Dimension (G-GMD)										
	G-C				G-GPE					G-GMD			G-MP							
Modeling																				
Producing													X	X	X	X	X		X	
Interpreting													X	X	X	X		X		
Understanding													X		X	X	X	X	X	X
Evaluating													X			X	X		X	X
Improving																X				

CROSSWALK: Arizona Standards to the ACT

Arizona Mathematics Standards — Algebra I (Adopted 2016) Aligned to the ACT

Arizona Mathematics Standards — Algebra I		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
N	**Number and Quantity**	
R-N	**The Real Number System**	
A1.N-RN.B	Use properties of rational and irrational numbers.	
A1.N-RN.B.3	Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.	Number and Quantity: Rational and Irrational Numbers
N-Q	**Quantities**	
A1.N-Q.A	Reason quantitatively and use units to solve problems.	
A1.N-Q.A.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays, include utilizing real-world context.	Number and Quantity: Quantities and Units Integrating Essential Skills: Computation and Problem Solving with Real Numbers; Measurement Units and Unit Conversion
A1.N-Q.A.2	Define appropriate quantities for the purpose of descriptive modeling. Include problem-solving opportunities utilizing real-world context.	Number and Quantity: Quantities and Units Integrating Essential Skills: Computation and Problem Solving with Real Numbers
A1.N-Q.A.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities utilizing real-world context.	Number and Quantity: Quantities and Units Integrating Essential Skills: Computation and Problem Solving with Real Numbers
A	**Algebra**	
A-SSE	**Seeing Structures in Expressions**	
A1.A-SSE.A	Interpret the structure of expressions.	
A1.A-SSE.A.1	Interpret expressions that represent a quantity in terms of its context.	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities; Polynomial Expressions and Equations
A1.A-SSE.A.1.a	Interpret parts of an expression, such as terms, factors, and coefficients.	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities; Polynomial Expressions and Equations
A1.A-SSE.A.1.b	Interpret expressions by viewing one or more of their parts as a single entity.	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities; Polynomial Expressions and Equations
A1.A-SSE.A.2	Use structure to identify ways to rewrite numerical and polynomial expressions. Focus on polynomial multiplication and factoring patterns.	Algebra: Polynomial Expressions and Equations; Quadratic Expressions, Equations, and Inequalities

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.A-SSE.B	Write expressions in equivalent forms to solve problems.	
A1.A-SSE.B.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	Algebra: Quadratic Expressions, Equations, and Inequalities; Linear Expressions, Equations, and Inequalities
A1.A-SSE.B.3.a	Factor a quadratic expression to reveal the zeros of the function it defines.	Algebra: Quadratic Expressions, Equations, and Inequalities; Linear Expressions, Equations, and Inequalities
A1.A-SSE.B.3.b	Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	Algebra: Quadratic Expressions, Equations, and Inequalities; Linear Expressions, Equations, and Inequalities
A-APR	**Arithmetic with Polynomials and Rational Expressions**	
A1.A-APR.A	Perform arithmetic operations on polynomials.	
A1.A-APR.A.1	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	Algebra: Polynomial Expressions and Equations; Quadratic Expressions, Equations, and Inequalities
A1.A-APR.B	Understand the relationship between zeros and factors of polynomials.	
A1.A-APR.B.3	Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial. Focus on quadratic and cubic polynomials in which linear and quadratic factors are available.	Algebra: Polynomial Expressions and Equations; Quadratic Expressions, Equations, and Inequalities
A-CED	**Creating Equations**	
A1.A-CED.A	Create equations that describe numbers or relationships.	
A1.A-CED.A.1	Create equations and inequalities in one variable and use them to solve problems. Include problem-solving opportunities utilizing real-world context. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities Functions: Exponential and Logarithmic Functions
A1.A-CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities Functions: Exponential and Logarithmic Functions
A1.A-CED.A.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.	Algebra: Linear Expressions, Equations, and Inequalities; Systems of Equations and inequalities

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.A-CED.A.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities
A-REI	**Reasoning with Equations and Inequalities**	
A1.A-REI.A	**Understand solving equations as a process of reasoning and explain the reasoning.**	
A1.A-REI.A.1	Explain each step in solving linear and quadratic equations as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities
A1.REI.B	**Solve equations and inequalities in one variable.**	
A1.A-REI.B.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Algebra: Linear Expressions, Equations, and Inequalities
A1.A-REI.B.4	Solve quadratic equations in one variable.	Algebra: Quadratic Expressions, Equations, and Inequalities
A1.A-REI.B.4.a	Use the method of completing the square to transform any quadratic equation in x into an equation of the form (x – k)2 = q that has the same solutions. Derive the quadratic formula from this form.	Algebra: Quadratic Expressions, Equations, and Inequalities
A1.A-REI.B.4.b	Solve quadratic equations by inspection (e.g., x2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Focus on solutions for quadratic equations that have real roots. Include cases that recognize when a quadratic equation has no real solutions.	Algebra: Quadratic Expressions, Equations, and Inequalities
A1.A-REI.C	**Solve systems of equations.**	
A1.A-REI.C.5	Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	Algebra: Systems of Equations and Inequalities
A1.A-REI.C.6	Solve systems of linear equations exactly and approximately, focusing on pairs of linear equations in two variables. Include problem solving opportunities utilizing real-world context.	Algebra: Systems of Equations and Inequalities
A1.A-REI.D	**Represent and solve equations and inequalities graphically.**	
A1.A-REI.D.10	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve, which could be a line.	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.A-REI.D.11	Explain why the x-coordinates of the points where the graphs of the equations y=f(x) and y=g(x) intersect are the solutions of the equation f(x) =g(x); find the solutions approximately (e.g., using technology to graph the functions, make tables of values, or find successive approximations). Focus on cases where f(x) and/or g(x) are linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	Algebra: Systems of Equations and Inequalities; Linear Expressions, Equations, and Inequalities Functions: Properties of Functions
A1.A-REI.D.12	Graph the solutions to a linear inequality in two variables as a half-plane, excluding the boundary in the case of a strict inequality, and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	Algebra: Systems of Equations and Inequalities; Linear Expressions, Equations, and Inequalities
F	**Functions**	
F-IF	**Interpreting Functions**	
A1.F-IF.A	**Understand the concept of a function and use function notation.**	
A1.F-IF.A.1	Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).	Functions: Properties of Functions
A1.F-IF.A.2	Evaluate a function for inputs in the domain, and interpret statements that use function notation in terms of a context.	Functions: Properties of Functions
A1.F-IF.A.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.	Functions: Sequences and Series
A1.F-IF.B	**Interpret functions that arise in applications in terms of the context**	
A1.F-IF.B.4	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Include problem-solving opportunities utilizing real-world context. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.F-IF.B.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.	Functions: Properties of Functions
A1.F-IF.B.6	Calculate and interpret the average rate of change of a continuous function (presented symbolically or as a table) on a closed interval. Estimate the rate of change from a graph. Include problem-solving opportunities utilizing real-world context. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities
A1.F-IF.C	**Analyze functions using different representations.**	
A1.F-IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities
A1.F-IF.C.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Quadratic Expressions, Equations, and Inequalities
A1.F-IF.C.8.a	Use the process of factoring and completing the square of a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.	Functions: Properties of Functions Algebra: Quadratic Expressions, Equations, and Inequalities
A1.F-IF.C.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities
F-BF	**Building Functions**	
A1.F-BF.A	Build a function that models a relationship between two quantities.	
A1.F-BF.A.1	Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from real-world context. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.F-BF.B	Build new functions from existing functions.	
A1.F-BF.B.3	Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), and f(x+k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities
F-LE	**Linear, Quadratic, and Exponential Models**	
A1.F-LE.A	Construct and compare linear, quadratic, and exponential models and solve problems.	
A1.F-LE.A.1	Distinguish between situations that can be modeled with linear functions and with exponential functions.	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities
A1.F-LE.A.1.a	Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities
A1.F-LE.A.1.b	Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.	Functions: Properties of Functions Algebra: Linear Expressions, Equations, and Inequalities
A1.F-LE.A.1.c	Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	Functions: Properties of Functions; Exponential and Logarithmic Functions
A1.F-LE.A.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or input/output pairs.	Functions: Properties of Functions; Sequences and Series; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities
A1.F-LE.A.3	Observe, using graphs and tables, that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically.	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities
A1.F-LE.B	**Interpret expressions for functions in terms of the situation they model.**	
A1.F-LE.B.5	Interpret the parameters in a linear or exponential function with integer exponents utilizing real world context.	Functions: Properties of Functions; Exponential and Logarithmic Functions Algebra: Linear Expressions, Equations, and Inequalities
S	**Statistics and Probability**	
S-ID	**Summarize, represent, and interpret data on a single count or measurement variable.**	
A1.S-ID.A	Summarize, represent, and interpret data on a single count or measurement variable.	
A1.S-ID.A.1	Represent real-value data with plots for the purpose of comparing two or more data sets.	Statistics and Probability: Interpret Data on a Single Count Integrating Essential Skills: Data Summary and Displays

(continued)

(continued)

Arizona Mathematics Standards -- Algebra I		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.S-ID.A.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	Statistics and Probability: Interpret Data on a Single Count Integrating Essential Skills: Data Summary and Displays
A1.S-ID.A.3	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of outliers if present.	Statistics and Probability: Interpret Data on a Single Count Integrating Essential Skills: Data Summary and Displays
A1.S-ID.B	Summarize, represent, and interpret data on two categorical and quantitative variables.	
A1.S-ID.B.5	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data, including joint, marginal, and conditional relative frequencies. Recognize possible associations and trends in the data.	Statistics and Probability: Interpret Data on Two Counts Integrating Essential Skills: Scatterplots and Association
A1.S-ID.B.6	Represent data on two quantitative variables on a scatter plot, and describe how the quantities are related.	Statistics and Probability: Interpret Data on Two Counts Integrating Essential Skills: Scatterplots and Association
A1.S-ID.B.6.a	Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Focus on linear models.	Statistics and Probability: Interpret Data on Two Counts Integrating Essential Skills: Scatterplots and Association
A1.S-ID.B.6.b	Informally assess the fit of a function by plotting and analyzing residuals.	Statistics and Probability: Interpret Data on Two Counts Integrating Essential Skills: Scatterplots and Association
A1.S-ID.C	Interpret linear models.	
A1.S-ID.C.7	Interpret the slope as a rate of change and the constant term of a linear model in the context of the data.	Statistics and Probability: Interpret Data on Two Counts Integrating Essential Skills: Scatterplots and Association
A1.S-ID.C.8	Compute and interpret the correlation coefficient of a linear relationship.	Statistics and Probability: Interpret Data on Two Counts Integrating Essential Skills: Scatterplots and Association
A1.S-ID.C.9	Distinguish between correlation and causation.	Statistics and Probability: Interpret Data on Two Counts Integrating Essential Skills: Scatterplots and Association
S-CP	**Conditional Probability and the rules of Probability**	
A1.S-CP.A	Understand independence and conditional probability and use them to interpret data.	
A1.S-CP.A.1	Describe events as subsets of a sample space using characteristics of the outcomes, or as unions, intersections, or complements of other events.	Statistics and Probability: Rules of Probability Integrating Essential Skills: Basic Probability
A1.S-CP.A.2	Use the Multiplication Rule for independent events to understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.	Statistics and Probability: Rules of Probability Integrating Essential Skills: Basic Probability

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
MP	**Standards for Mathematical Practice**	
A1.MP.1	Make sense of problems and persevere in solving them. Mathematically proficient students explain to themselves the meaning of a problem, look for entry points to begin work on the problem, and plan and choose a solution pathway. While engaging in productive struggle to solve a problem, they continually ask themselves, “Does this make sense?" to monitor and evaluate their progress and change course if necessary. Once they have a solution, they look back at the problem to determine if the solution is reasonable and accurate. Mathematically proficient students check their solutions to problems using different methods, approaches, or representations. They also compare and understand different representations of problems and different solution pathways, both their own and those of others.	Modeling: Producing; Interpreting; Understanding; Evaluating
A1.MP.2	Reason abstractly and quantitatively. Mathematically proficient students make sense of quantities and their relationships in problem situations. Students can contextualize and decontextualize problems involving quantitative relationships. They contextualize quantities, operations, and expressions by describing a corresponding situation. They decontextualize a situation by representing it symbolically. As they manipulate the symbols, they can pause as needed to access the meaning of the numbers, the units, and the operations that the symbols represent. Mathematically proficient students know and flexibly use different properties of operations, numbers, and geometric objects and when appropriate they interpret their solution in terms of the context.	Modeling: Producing; Interpreting

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.MP.3	Construct viable arguments and critique the reasoning of others. Mathematically proficient students construct mathematical arguments (explain the reasoning underlying a strategy, solution, or conjecture) using concrete, pictorial, or symbolic referents. Arguments may also rely on definitions, assumptions, previously established results, properties, or structures. Mathematically proficient students make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. Mathematically proficient students present their arguments in the form of representations, actions on those representations, and explanations in words (oral or written). Students critique others by affirming or questioning the reasoning of others. They can listen to or read the reasoning of others, decide whether it makes sense, ask questions to clarify or improve the reasoning, and validate or build on it. Mathematically proficient students can communicate their arguments, compare them to others, and reconsider their own arguments in response to the critiques of others.	Modeling: Producing; Interpreting; Understanding
A1.MP.4	Model with mathematics. Mathematically proficient students apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. When given a problem in a contextual situation, they identify the mathematical elements of a situation and create a mathematical model that represents those mathematical elements and the relationships among them. Mathematically proficient students use their model to analyze the relationships and draw conclusions. They interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.	Modeling: Producing; Interpreting; Understanding; Evaluating; Improving

(continued)

(continued)

Arizona Mathematics Standards — Algebra I		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A1.MP.5	Use appropriate tools strategically. Mathematically proficient students consider available tools when solving a mathematical problem. They choose tools that are relevant and useful to the problem at hand. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful; recognizing both the insight to be gained and their limitations. Students deepen their understanding of mathematical concepts when using tools to visualize, explore, compare, communicate, make and test predictions, and understand the thinking of others.	Modeling: Producing; Understanding; Evaluating
A1.MP.6	Attend to precision. Mathematically proficient students clearly communicate to others using appropriate mathematical terminology, and craft explanations that convey their reasoning. When making mathematical arguments about a solution, strategy, or conjecture, they describe mathematical relationships and connect their words clearly to their representations. Mathematically proficient students understand meanings of symbols used in mathematics, calculate accurately and efficiently, label quantities appropriately, and record their work clearly and concisely.	Modeling: Interpreting; Understanding
A1.MP.7	Look for and make use of structure. Mathematically proficient students use structure and patterns to assist in making connections among mathematical ideas or concepts when making sense of mathematics. Students recognize and apply general mathematical rules to complex situations. They are able to compose and decompose mathematical ideas and notations into familiar relationships. Mathematically proficient students manage their own progress, stepping back for an overview and shifting perspective when needed.	Modeling: Producing; Understanding; Evaluating
A1.MP.8	Look for and express regularity in repeated reasoning. Mathematically proficient students look for and describe regularities as they solve multiple related problems. They formulate conjectures about what they notice and communicate observations with precision. While solving problems, students maintain oversight of the process and continually evaluate the reasonableness of their results. This informs and strengthens their understanding of the structure of mathematics which leads to fluency.	Modeling: Understanding; Evaluating

Arizona Mathematics Standards — Geometry (Adopted 2016) Aligned to the ACT

Arizona Mathematics Standards — Geometry		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
N	**Number and Quantity**	
N-Q	**Quantities**	
G.N-Q.A	**Reason quantitatively and use units to solve problems.**	
G.N-Q.A.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays, include utilizing real-world context.	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Measurement Units and Unit Conversion
G.N-Q.A.2	Define appropriate quantities for the purpose of descriptive modeling.	Geometry: Geometric Measurement and Modeling
G.N-Q.A.3	Include problem-solving opportunities utilizing real-world context.	Geometry: Geometric Measurement and Modeling
G	**Geometry**	
G-CO	**Congruence**	
G.G-CO.A	**Experiment with transformations in the plane.**	
G.G-CO.A.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	Geometry: Coordinate Geometry Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.G-CO.A.2	Represent and describe transformations in the plane as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not.	Geometry: Transformations; Coordinate Geometry
G.G-CO.A.3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	Geometry: Transformations; Coordinate Geometry
G.G-CO.A.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	Geometry: Transformations; Coordinate Geometry
G.G-CO.A.5	Given a geometric figure and a rotation, reflection, or translation draw the transformed figure. Specify a sequence of transformations that will carry a given figure onto another.	Geometry: Transformations; Coordinate Geometry

(continued)

(continued)

Arizona Mathematics Standards — Geometry		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
G.G-CO.B	**Understand congruence in terms of rigid motions.**	
G.G-CO.B.6	Use geometric definitions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	Geometry: Transformations; Proof, Reasoning, and Constructions
G.G-CO.B.7	Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.	Geometry: Transformations; Proof, Reasoning, and Constructions
G.G-CO.B.8	Explain how the criteria for triangle congruence (ASA, AAS, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.	Geometry: Transformations; Proof, Reasoning, and Constructions
G.G-CO.C	**Prove geometric theorems.**	
G.G-CO.C.9	Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.	Geometry: Proof, Reasoning, and Constructions
G.G-CO.C.10	Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangle are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.	Geometry: Proof, Reasoning, and Constructions Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.G-CO.C.11	Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and rectangles are parallelograms with congruent diagonals.	Geometry: Proof, Reasoning, and Constructions Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.G-CO.D	**Make geometric constructions.**	
G.G-CO.D.12	Make formal geometric constructions with a variety of tools and methods. Constructions include: copying segments; copying angles; bisecting segments; bisecting angles; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.	Geometry: Proof, Reasoning, and Constructions
G.G-CO.D.13	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle; with a variety of tools and methods.	Geometry: Proof, Reasoning, and Constructions

(continued)

(continued)

Arizona Mathematics Standards — Geometry		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
G-SRT	**Similarity, Right Triangles, and Trigonometry**	
G.G-SRT.A	**Understand similarity in terms of similarity transformations.**	
G.G-SRT.A.1	Verify experimentally the properties of dilations given by a center and a scale factor:	Geometry: Similarity, Right Triangles, and Trigonometry; Transformations
	a. Dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.	Geometry: Similarity, Right Triangles, and Trigonometry; Transformations
	b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	Geometry: Similarity, Right Triangles, and Trigonometry; Transformations
G.G-SRT.A.2	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.	Geometry: Similarity, Right Triangles, and Trigonometry; Transformations
G.G-SRT.A.3	Use the properties of similarity transformations to establish the AA, SAS, and SSS criterion for two triangles to be similar.	Geometry: Similarity, Right Triangles, and Trigonometry; Proof, Reasoning, and Constructions
G.G-SRT.B	**Prove theorems involving similarity.**	
G.G-SRT.B.4	Prove theorems about triangles. Theorems include: an interior line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.	Geometry: Similarity, Right Triangles, and Trigonometry; Proof, Reasoning, and Constructions
G.G-SRT.B.5	Use congruence and similarity criteria to prove relationships in geometric figures and solve problems utilizing real-world context.	Geometry: Similarity, Right Triangles, and Trigonometry; Proof, Reasoning, and Constructions
G.G-SRT.C	**Define trigonometric ratios and solve problems involving right triangles.**	
G.G-SRT.C.6	Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	Geometry: Similarity, Right Triangles, and Trigonometry
G.G-SRT.C.7	Explain and use the relationship between the sine and cosine of complementary angles.	Geometry: Similarity, Right Triangles, and Trigonometry
G.G-SRT.C.8	Use trigonometric ratios (including inverse trigonometric ratios) and the Pythagorean Theorem to find unknown measurements in right triangles utilizing real-world context.	Geometry: Similarity, Right Triangles, and Trigonometry Integrating Essential Skills: Pythagorean Theorem

(continued)

(continued)

Arizona Mathematics Standards — Geometry		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
G-C	**Circles**	
G.G-C.A	**Understand and apply theorems about circles.**	
G.G-C.A.1	Prove that all circles are similar.	Geometry: Properties of Circles
G.G-C.A.2	Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.	Geometry: Properties of Circles
G.G-C.A.3	Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	Geometry: Properties of Circles
G.G-C.B	**Find arc lengths and areas of sectors of circles.**	
G.G-C.B.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector. Convert between degrees and radians.	Geometry: Properties of Circles
G-GPE	**Expressing Geometric Properties with Equations**	
G.G-GPE.A	**Translate between the geometric description and the equation for a conic section.**	
G.G-GPE.A.1	Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.	Geometry: Conic Sections Integrating Essential Skills: Pythagorean Theorem
G.G-GPE.B	**Use coordinates to prove geometric theorems algebraically.**	
G.G-GPE.B.4	Use coordinates to algebraically prove or disprove geometric relationships. Relationships include: proving or disproving geometric figures given specific points in the coordinate plane; and proving or disproving if a specific point lies on a given circle.	Geometry: Coordinate Geometry; Proof, Reasoning, and Constructions
G.G-GPE.B.5	Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems, including finding the equation of a line parallel or perpendicular to a given line that passes through a given point.	Geometry: Coordinate Geometry; Proof, Reasoning, and Constructions
G.G-GPE.B.6	Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	Geometry: Coordinate Geometry
G.G-GPE.B.7	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles.	Geometry: Coordinate Geometry Integrating Essential Skills: Perimeter, Circumference, and Area

(continued)

(continued)

Arizona Mathematics Standards — Geometry		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
G-GMD	**Geometric Measurement and Dimension**	
G.G-GMD.A	**Explain volume formulas and use them to solve problems.**	
G.G-MG.A.1	Use geometric shapes, their measures, and their properties to describe objects utilizing real-world context.	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.G-MG.A.2	Apply concepts of density based on area and volume in modeling situations utilizing real-world context.	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Surface Area and Volume
G.G-MG.A.3	Apply geometric methods to solve design problems utilizing real-world context.	Geometry: Geometric Measurement and Modeling
MP	**Standards for Mathematical Practice**	
G.MP.1	Make sense of problems and persevere in solving them. Mathematically proficient students explain to themselves the meaning of a problem, look for entry points to begin work on the problem, and plan and choose a solution pathway. While engaging in productive struggle to solve a problem, they continually ask themselves, “Does this make sense?" to monitor and evaluate their progress and change course if necessary. Once they have a solution, they look back at the problem to determine if the solution is reasonable and accurate. Mathematically proficient students check their solutions to problems using different methods, approaches, or representations. They also compare and understand different representations of problems and different solution pathways, both their own and those of others.	Modeling: Producing; Interpreting; Understanding; Evaluating
G.MP.2	Reason abstractly and quantitatively. Mathematically proficient students make sense of quantities and their relationships in problem situations. Students can contextualize and decontextualize problems involving quantitative relationships. They contextualize quantities, operations, and expressions by describing a corresponding situation. They decontextualize a situation by representing it symbolically. As they manipulate the symbols, they can pause as needed to access the meaning of the numbers, the units, and the operations that the symbols represent. Mathematically proficient students know and flexibly use different properties of operations, numbers, and geometric objects and when appropriate they interpret their solution in terms of the context.	Modeling: Producing; Interpreting

(continued)

(continued)

Arizona Mathematics Standards — Geometry		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
G.MP.3	Construct viable arguments and critique the reasoning of others. Mathematically proficient students construct mathematical arguments (explain the reasoning underlying a strategy, solution, or conjecture) using concrete, pictorial, or symbolic referents. Arguments may also rely on definitions, assumptions, previously established results, properties, or structures. Mathematically proficient students make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. Mathematically proficient students present their arguments in the form of representations, actions on those representations, and explanations in words (oral or written). Students critique others by affirming or questioning the reasoning of others. They can listen to or read the reasoning of others, decide whether it makes sense, ask questions to clarify or improve the reasoning, and validate or build on it. Mathematically proficient students can communicate their arguments, compare them to others, and reconsider their own arguments in response to the critiques of others.	Modeling: Producing; Interpreting; Understanding
G.MP.4	Model with mathematics. Mathematically proficient students apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. When given a problem in a contextual situation, they identify the mathematical elements of a situation and create a mathematical model that represents those mathematical elements and the relationships among them. Mathematically proficient students use their model to analyze the relationships and draw conclusions. They interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.	Modeling: Producing; Interpreting; Understanding; Evaluating; Improving

(continued)

(continued)

Arizona Mathematics Standards — Geometry		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
G.MP.5	Use appropriate tools strategically. Mathematically proficient students consider available tools when solving a mathematical problem. They choose tools that are relevant and useful to the problem at hand. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful; recognizing both the insight to be gained and their limitations. Students deepen their understanding of mathematical concepts when using tools to visualize, explore, compare, communicate, make and test predictions, and understand the thinking of others.	Modeling: Producing; Understanding; Evaluating
G.MP.6	Attend to precision. Mathematically proficient students clearly communicate to others using appropriate mathematical terminology, and craft explanations that convey their reasoning. When making mathematical arguments about a solution, strategy, or conjecture, they describe mathematical relationships and connect their words clearly to their representations. Mathematically proficient students understand meanings of symbols used in mathematics, calculate accurately and efficiently, label quantities appropriately, and record their work clearly and concisely.	Modeling: Interpreting; Understanding
G.MP.7	Look for and make use of structure. Mathematically proficient students use structure and patterns to assist in making connections among mathematical ideas or concepts when making sense of mathematics. Students recognize and apply general mathematical rules to complex situations. They are able to compose and decompose mathematical ideas and notations into familiar relationships. Mathematically proficient students manage their own progress, stepping back for an overview and shifting perspective when needed.	Modeling: Producing; Understanding; Evaluating

(continued)

(continued)

Arizona Mathematics Standards — Geometry		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
G.MP.8	Look for and express regularity in repeated reasoning. Mathematically proficient students look for and describe regularities as they solve multiple related problems. They formulate conjectures about what they notice and communicate observations with precision. While solving problems, students maintain oversight of the process and continually evaluate the reasonableness of their results. This informs and strengthens their understanding of the structure of mathematics which leads to fluency.	Modeling: Understanding; Evaluating

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

For questions about this guide or ACT products and services that support state and district customers, please contact the ACT State and Federal Programs team at SFP@act.org.