Module 3:

Instructional Planning for Student Readiness

[TAB PAGE]

Module 3: Instructional Planning for Student Readiness

A Bridge from Day 1

- As a table, discuss your biggest takeaway from yesterday. What were your ah-ha moments?

- What implications did yesterday's modules have for your school or district?

- What implications did yesterday's modules have for you in your professional practices?

- What are your expectations for today's session?

Objectives

- Define the content literacy skills necessary for students to be successful on the ACT
- Examine ACT Standards and Tennessee State Standards to find commonality and connection points to build on in daily instruction
- Make actionable school and classroom plans for integrating ACT skills into content area instruction

Rationale

"U.S. high school graduates continue to make little progress in college and career readiness, according to The Condition of College & Career Readiness 2015, the latest annual student readiness report from ACT, released today. The lack of growth has prompted ACT to issue a call to action to policymakers, educators, students and parents, urging them to do their part to help improve educational outcomes and support college and career readiness for all students."

"This year, 40 percent of graduates showed strong readiness, meeting the ACT College Readiness Benchmarks in at least three of the four core subject areas (English, math, reading and science). That percentage has stayed virtually flat over the past five years.
In contrast, 31 percent of students did not meet readiness levels in any of the four subject areas. This figure is unchanged from the past two years and slightly higher than in 2011 and 2012."

- Retrieved from http://www.act.org/content/act/en/newsroom/us-high-school-graduates-showing-little-progress-in-college-readiness.html February 2016, ACT 2015 Public Students Cohort Report.

- Based on the rationale above, what implications does Module 3 potentially have on instruction in your school or classroom?

- Based on the Benchmarks discussed in Module 2, what goals do you have for your instruction?

What does the ACT ask students to do?

"The biggest differentiator of success for our students on the ACT, is the **ability to read complex text proficiently**. We know that the majority of passages on the ACT are nonfiction/informational texts. Because of this, we need to **further develop the literacy skills in our students to access all types of texts**. Strong reading, fluency, comprehension, and stamina should be encompassed in our classrooms every day. **It is only when our students are strong readers will we be able to see significant movement in our state's ACT average**, signaling that Tennessee students are ready for the challenges of college and the workforce."

- Commissioner Candice McQueen

The desire to raise Tennessee's ACT average is rooted in **improving postsecondary and career readiness** for all Tennessee students. This goal reflects the reality that Tennessee students will enter a workforce that requires some type of postsecondary training. With **a score of 21**, students are **predicted to be more successful** in **both college and career**.

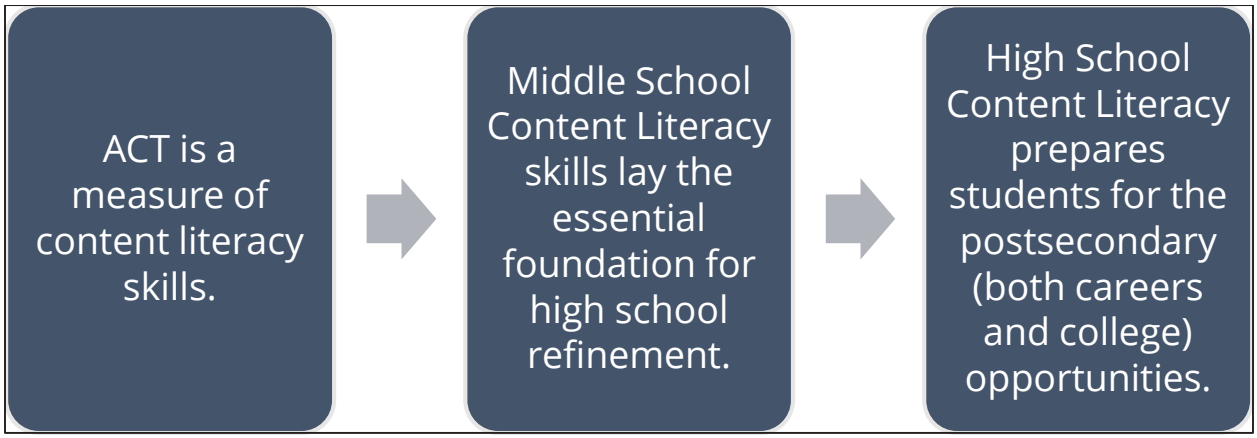
- ACT Connections: Tennessee Academic Standards and ACT Subtests, p. 7

The skills of the ACT English and reading extend across grade levels; however, the **biggest differentiator of success** is the ability to read complex text proficiently. The Tennessee academic standards call for students to have **regular practice with complex text**. It does mean that students should **read a range of nonfiction/informational text** from the natural sciences, social sciences, and humanities throughout the school year.

- ACT Connections: Tennessee Academic Standards and ACT Subtests, p. 6

"English and math ACT questions are based on skills and standards taught from elementary school through high school. This means that **students who have a strong foundation in math and reading** and who consistently perform well on state assessments will use the same skills to perform well on the ACT. Additionally, all academic areas have a crucial part to play in preparing students for ACT success. **Science and social studies teachers at all grade levels should be preparing students to read text in their content areas.**"

- ACT Connections: Tennessee Academic Standards and ACT Subtests, p .7



- As educators, we set goals for our students to attain a score of 21 or higher, what are we really saying to students, to families, to their postsecondary opportunities?
- We are really saying that we are committing to presenting students with appropriately-complex informational and literary texts at each grade level.
- Students can successfully interact with complex texts to discern meaning, make inferences, and synthesize information.

"Given high-quality instruction, all students tackle cognitively complex tasks by building knowledge through daily interaction with rich text, marshalling evidence to support an idea, creating unique and purposeful writing, and building a dynamic vocabulary to become skilled in each content area."

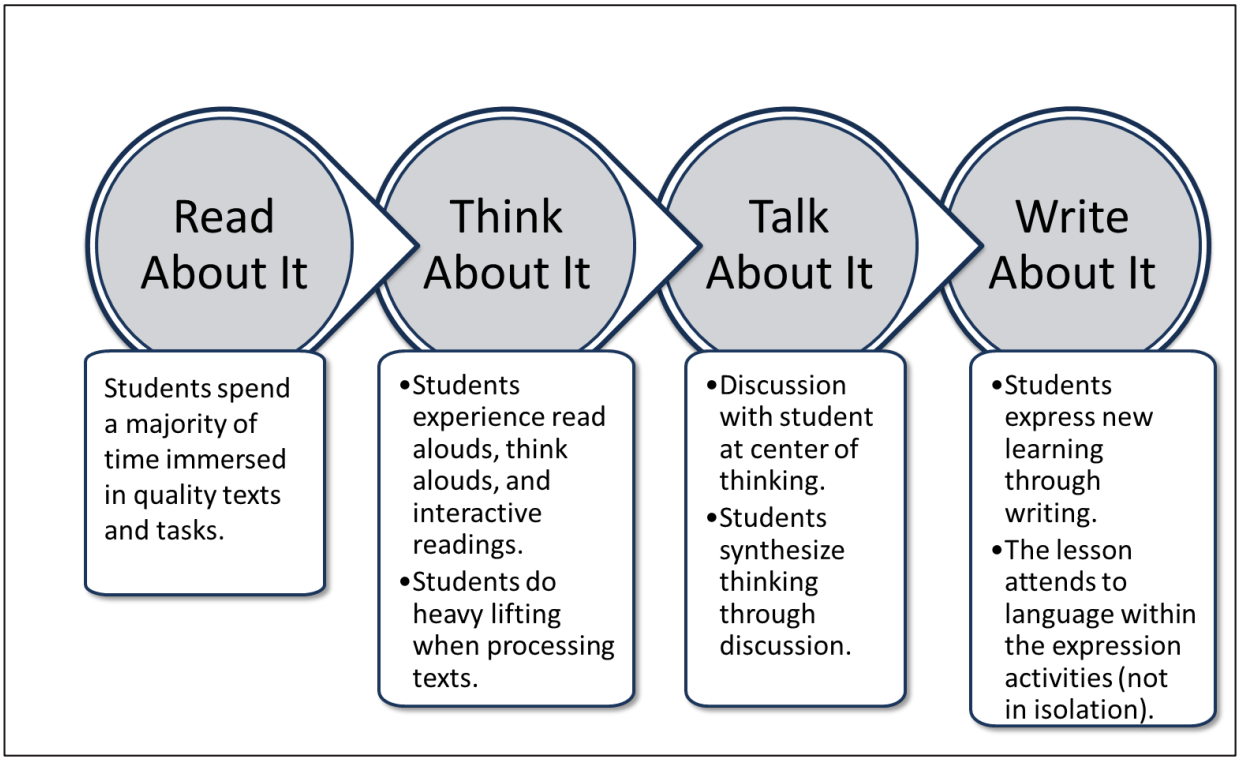
- Miah Daughtery, ELA Coordinator, TDOE

What do the ELA standards say about literacy?

"Literacy is a multi-faceted, complex relationship of interrelated skills. The ultimate goal of literacy instruction is for students to become proficient readers and writers." p.4

"As human beings, we have the right to literacy (UNESCO, 2005). Educators have the responsibility to provide students with the tools to become active, literate members of our society." p.5

"The committee of Tennessee teachers, administrators, and higher education faculty who wrote the standards maintained an intentional focus on the language of the four strands. Following the mantra of "read about it, think about it, talk about it, write about it"—the committee view reading and writing as reciprocal skills; therefore, the role of texts and routine writing permeates all of the standards. Students should read high quality texts, discuss their interpretation and analysis, and write about their learning." p.2



Types of Thinking

- Literal: Evaluate a single text, synthesize ideas from different texts
- Inferential: Analyze the meaning of a text, applying knowledge from within the text and from background knowledge
- Critical: Synthesize knowledge and provide explanation of new understanding

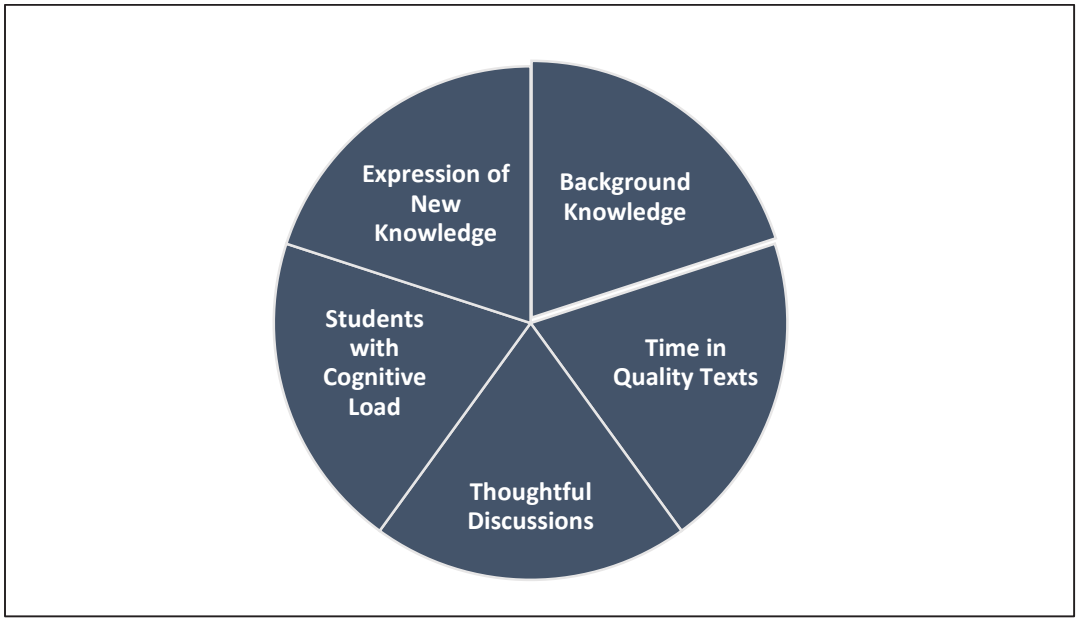
Refer back to the chart about the ACT subtests you created on page 45 of your manual. What stands out to you about these types of thinking? When does the ACT have students do each?

Task Predicts Performance

"What determines what students know and are able to do is not what the curriculum says they are supposed to do, nor even what the teacher thinks he or she is asking students to do. What predicts performance is what students are actually doing."

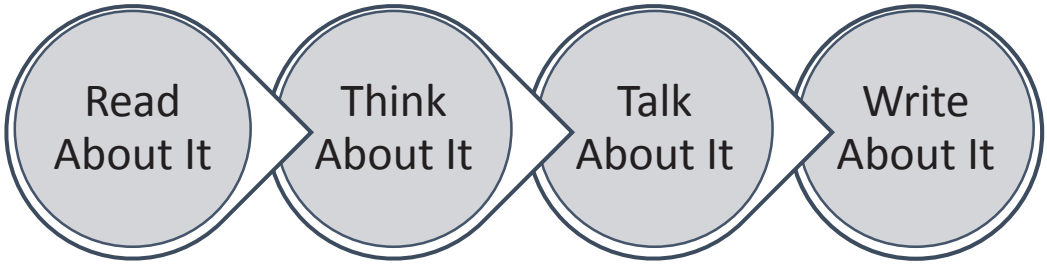
- Richard F. Elmore (2008)

- How are we connecting the reading (meaning making) and writing (expression of new understanding) each day?



Literacy Across Content Areas

Read the information about literacy across the different content areas, focusing on the content area that best fits your subject area expertise. Capture information in the graphic organizer below about how this should look in your specific content-area classroom.



Literacy in Social Studies

- Embedded within the Tennessee Social Studies standards, there are 194 various primary sources found in our standards that are labeled either “to read” or “to consider.”
- There are also 101 standards that students could potentially be asked to write on for our state assessments.
- These are the documents and standards that that teachers should be using to allow students ample opportunities to Think, Read, and Write like Historians.
- Students should spend a majority of their time immersed in primary source documents.
- Students should be exposed to context and academic vocabulary specific to social studies.
- Students should be exposed to multiple perspectives on historical issues and use academic language to write accurately to describe and synthesize those perspectives, including their own.

Literacy in Science & Technical Subjects

- Effective communication within a scientific or technical context requires students to apply literacy skills in reading, vocabulary, speaking and listening, and writing.
- Scientific and technical information is presented in **multiple formats** from various tones and perspectives.
- Scientifically and technically literate students must **process and synthesize information** effectively to **generate new ideas and solutions** while presented in **multiple formats** from various tones and perspectives.
- Students are able to interpret and analyze information in tables, charts, diagrams, and infographics.
- Students should spend a majority of their time immersed in a variety of authentic texts, including laboratory experiments, articles, and technical manuals.
- Students should be required to read, and produce, representations of data using academic and technical vocabulary.
- Students should be able to write in a style that is appropriate for their audience, including data analysis and documenting sequences of events.

Literacy in Mathematics Standards

- "Reading in mathematics is different from reading literature. Mathematics contains expository text along with precise definitions, theorems, examples, graphs, tables, charts, diagrams, and exercises." (p. 13)
- "Students are expected to recognize multiple representations of information, use mathematics in context, and draw conclusions from the information presented." (p. 13)
- "Mathematically proficient students write mathematical arguments to support and refute conclusions and cite evidence for these conclusions." (p. 14)
- Mathematically proficient students have the capacity to **engage fully with mathematics in context** by posing questions, choosing appropriate problem-solving approaches, and justifying solutions.
- Mathematically proficient students **communicate using precise terminology and multiple representations** including graphs, tables, charts, and diagrams.
- By describing and contextualizing mathematics, **students create arguments and support conclusions**. They evaluate and critique the reasoning of others and analyze and reflect on their own thought processes.

Key Idea #7

Literacy across all content areas is extremely important to improving ACT scores and ensuring our students are prepared for whatever **pathway** they choose.

ACT Mathematics Standards

Reminder: The ACT College Readiness Benchmark for Mathematics is 22. Students who achieve this score have a 50 percent likelihood of achieving a B or better in a first-year College Algebra course at a typical college. Knowledge and skills highly likely to be demonstrated by students who meet the Benchmark are in bold in the table above.

Score Range	Topics in the Flow to Number and Quantity (N)
13-15	**N 201. Perform one-operation computation with whole numbers and decimals.** **N202. Recognize equivalent fractions and fractions in lowest terms** **N203. Locate positive rational numbers (expressed as whole numbers, fractions, decimals, and mixed numbers) on the number line.**
16-19	**N 301. Recognize one-digit factors of a number.** **N 302. Identify a digit's place value.** **N 303. Locate rational numbers on the number line.**
20-23	**N 401. Exhibit knowledge of elementary number concepts such as rounding, the ordering of decimals, pattern identification, primes, and greatest common factor** **N 402. Write positive powers of 10 by using exponents.** **N 403. Comprehend the concept of length on the number line, and find the distance between two points.** **N 404. Understand absolute value in terms of distance.** **N 405. Find the distance in the coordinate plane between two points with the same x-coordinate or y-coordinate.** **N 406. Add two matrices that have whole number entries.**
24-27	N 501. Order fractions N 502. Find and use the least common multiple N 503. Work with numerical factors N 504. Exhibit some knowledge of the complex numbers N 505. Add and subtract matrices that have integer entries
28-32	N 601. Apply number properties involving prime factorization. N 602. Apply number properties involving even/odd numbers and factors/multiples N 603. Apply number properties involving positive/negative numbers N.604. Apply the facts that π is irrational and that the square root of an integer is rational only if that integer is a perfect square. N 605. Apply properties of rational exponents.

	N 606. Multiply two complex numbers. N 607. Use relations involving addition, subtraction, and scalar multiplication of vectors and matrices.
33-36	N 701. Analyze and draw conclusions based on number concepts. N 702. Apply properties of rational numbers and the rational number system. N 703. Apply properties of real numbers and the real number system, including properties of irrational numbers. N 704. Apply properties of complex numbers and the complex number system. N 705. Multiply matrices. N 706. Apply properties of matrices and properties of matrices as a number system.

ACT Mathematics Standards

Score Range	Topics in the Flow To Algebra (A)	Topics in the Flow To Functions (F)
13-15	**AF 201. Solve problems in one or two steps using whole numbers and using decimals in the context of money.**	
	A 201. Exhibit knowledge of basic expressions (e.g. identify an expression for a total as b +g). **A 202. Solve equations in the form x+a=b, where a and b are whole numbers or decimals.**	F 201. Extend a given pattern by a few terms for patterns that have a constant increase or decrease between terms.
16-19	**AF 301. Solve routine one-step arithmetic problems using positive rational numbers, such as single-step percent** **AF 302. Solve some routine two-step arithmetic problems** **AF 303. Relate a graph to a situation described qualitatively in terms of familiar properties such as before and after, increasing and decreasing, higher and lower** **AF 304. Apply a definition of an operation for whole numbers (e.g., a ¤ b = 3a – b)**	
	A 301. Substitute whole numbers for unknown quantities to evaluate expressions **A 302. Solve one-step equations to get integer or decimal answers** **A 303. Combine like terms (e.g., 2x + 5x)**	F 301. Extend a given pattern by a few terms for patterns that have a constant factor between terms.
20-23	**AF 401. Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and estimating by using a given average value in place of actual values** **AF 402. Perform straightforward word-to-symbol translations** **AF 403. Relate a graph to a situation described in terms of a starting value and an additional amount per unit (e.g., unit cost, weekly growth)**	
	A 401. Evaluate algebraic expressions by substituting integers for unknown quantities	**F 401. Evaluate linear and quadratic functions, expressed in function notation, at integer Values**

	A 402. Add and subtract simple algebraic expressions **A 403. Solve routine first-degree equations** **A 404. Multiply two binomials** **A 405. Match simple inequalities with their graphs on the number line (e.g., x ≥ –)** **A 406. Exhibit knowledge of slope]**	
24-27	AF 501. Solve multistep arithmetic problems that involve planning or converting common derived units of measure (e.g., feet per second to miles per hour) AF 502. Build functions and write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions) AF 503. Match linear equations with their graphs in the coordinate plane	
	A 501. Recognize that when numerical quantities are reported in real-world contexts, the numbers are often rounded A 502. Solve real-world problems by using first-degree equations A 503. Solve first-degree inequalities when the method does not involve reversing the inequality sign A 504. Match compound inequalities with their graphs on the number line (e.g., $-10.5 < x \leq 20.3$) A 505. Add, subtract, and multiply polynomials A 506. Identify solutions to simple quadratic equations	F 501. Evaluate polynomial functions, expressed in function notation, at integer values F 502. Find the next term in a sequence described recursively F 503. Build functions and use quantitative information to identify graphs for relations that are proportional or linear F 504. Attend to the difference between a function modeling a situation and the reality of the situation F 505. Understand the concept of a function as having a well-defined output value at each valid input value
	507. Solve quadratic equations in the form $(x + a)(x + b) = 0$, where a and b are numbers or variables	F 506. Understand the concept of domain and range in terms of valid input and output, and in terms of function graphs F 507. Interpret statements that use

	A 508. Factor simple quadratics (e.g., the difference of squares and perfect square trinomials) A 509. Work with squares and square roots of numbers A 510. Work with cubes and cube roots of numbers A 511. Work with scientific notation A 512. Work problems involving positive integer exponents A 513. Determine when an expression is undefined A 514. Determine the slope of a line from an equation	function notation in terms of their context F 508. Find the domain of polynomial functions and rational functions F 509. Find the range of polynomial functions F 510. Find where a rational function's graph has a vertical asymptote F 511. Use function notation for simple functions of two variables
28-32	AF 601. Solve word problems containing several rates, proportions, or percentages AF 602. Build functions and write expressions, equations, and inequalities for common algebra settings AF 603. Interpret and use information from graphs in the coordinate plane AF 604. Given an equation or function, find an equation or function whose graph is a translation by a specified amount up or down	
	A 601. Manipulate expressions and equations A 602. Solve linear inequalities when the method involves reversing the inequality sign A 603. Match linear inequalities with their graphs on the number line A 604. Solve systems of two linear equations A 605. Solve quadratic equations A 606. Solve absolute value equations	F 601. Relate a graph to a situation described qualitatively in terms of faster change or slower change F 602. Build functions for relations that are inversely proportional F 603. Find a recursive expression for the general term in a sequence described recursively F 604. Evaluate composite functions at integer values
33-36	AF 701. Solve complex arithmetic problems involving percent of increase or decrease or requiring integration of several concepts (e.g., using several ratios, comparing percentages, or comparing averages) AF 702. Build functions and write expressions, equations, and inequalities when the process requires planning and/or strategic manipulation	

	AF 703. Analyze and draw conclusions based on properties of algebra and/or functions AF 704. Analyze and draw conclusions based on information from graphs in the coordinate plane AF 705. Identify characteristics of graphs based on a set of conditions or on a general equation such as $y = ax^2 + c$ AF 706. Given an equation or function, find an equation or function whose graph is a translation by specified amounts in the horizontal and vertical directions	
33-36	A 701. Solve simple absolute value inequalities A 702. Match simple quadratic inequalities with their graphs on the number line A 703. Apply the remainder theorem for polynomials, that P(a) is the remainder when P(x) is divided by (x – a)	F 701. Compare actual values and the values of a modeling function to judge model fit and compare models F 702. Build functions for relations that are exponential F 703. Exhibit knowledge of geometric sequences F 704. Exhibit knowledge of unit circle trigonometry F 705. Match graphs of basic trigonometric functions with their equations F 706. Use trigonometric concepts and basic identities to solve problems F 707. Exhibit knowledge of logarithms F 708. Write an expression for the composite of two simple functions

Score Range	Topics in the Flow to Geometry
13-15	G 201. Estimate the length of a line segment based on other lengths in a geometric figure G 202. Calculate the length of a line segment based on the lengths of other line segments that go in the same direction (e.g., overlapping line segments and parallel sides of polygons with only right angles) G 203. Perform common conversions of money and of length, weight, mass, and time within a measurement system (e.g., dollars to dimes, inches to feet, and hours to minutes)
16-19	G 301. Exhibit some knowledge of the angles associated with parallel lines G 302. Compute the perimeter of polygons when all side lengths are given G 303. Compute the area of rectangles when whole number dimensions are given G 304. Locate points in the first quadrant
20-23	G 401. Use properties of parallel lines to find the measure of an angle G 402. Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°) G 403. Compute the area and perimeter of triangles and rectangles in simple problems G 404. Find the length of the hypotenuse of a right triangle when only very simple computation is involved (e.g., 3-4-5 and 6-8-10 triangles) G 405. Use geometric formulas when all necessary information is given G 406. Locate points in the coordinate plane G 407. Translate points up, down, left, and right in the coordinate plane

4-27	G 501. Use several angle properties to find an unknown angle measure G 502. Count the number of lines of symmetry of a geometric figure G 503. Use symmetry of isosceles triangles to find unknown side lengths or angle measures G 504. Recognize that real-world measurements are typically imprecise and that an appropriate level of precision is related to the measuring device and procedure G 505. Compute the perimeter of simple composite geometric figures with unknown side lengths G 506. Compute the area of triangles and rectangles when one or more additional simple steps are required G 507. Compute the area and circumference of circles after identifying necessary information G 508. Given the length of two sides of a right triangle, find the third when the lengths are Pythagorean triples G 509. Express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths G 510. Determine the slope of a line from points or a graph G 511. Find the midpoint of a line segment G 512. Find the coordinates of a point rotated 180° around a given center point
28-32	G 601. Use relationships involving area, perimeter, and volume of geometric figures to compute another measure (e.g., surface area for a cube of a given volume and simple geometric probability) G 602. Use the Pythagorean theorem G 603. Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles G 604. Apply basic trigonometric ratios to solve right-triangle problems G 605. Use the distance formula G 606. Use properties of parallel and perpendicular lines to determine an equation of a line or coordinates of a point G 607. Find the coordinates of a point reflected across a vertical or horizontal line or across y = x G 608. Find the coordinates of a point rotated 90° about the origin G 609. Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)

33-36	G 701. Use relationships among angles, arcs, and distances in a circle G 702. Compute the area of composite geometric figures when planning and/or visualization is required G 703. Use scale factors to determine the magnitude of a size change G 704. Analyze and draw conclusions based on a set of conditions G 705. Solve multistep geometry problems that involve integrating concepts, planning, and/or visualization

ACT Mathematics Standards

Scoring Range	TOPICS IN THE FLOW TO Statistics and Probability (S)
13-15	**S 201. Calculate the average of a list of positive whole numbers** **S 202. Extract one relevant number from a basic table or chart, and use it in a single computation**
16-19	**S 301. Calculate the average of a list of numbers** **S 302. Calculate the average given the number of data values and the sum of the data values** **S 303. Read basic tables and charts** **S 304. Extract relevant data from a basic table or chart and use the data in a computation** **S 305. Use the relationship between the probability of an event and the probability of its complement**
20-23	**S 401. Calculate the missing data value given the average and all data values but one** **S 402. Translate from one representation of data to another (e.g., a bar graph to a circle graph)** **S 403. Determine the probability of a simple event** **S 404. Describe events as combinations of other events (e.g., using and, or, and not)** **S 405. Exhibit knowledge of simple counting techniques**
24-27	S 501. Calculate the average given the frequency counts of all the data values S 502. Manipulate data from tables and charts S 503. Compute straightforward probabilities for common situations S 504. Use Venn diagrams in counting S 505. Recognize that when data summaries are reported in the real world, results are often rounded and must be interpreted as having appropriate precision S 506. Recognize that when a statistical model is used, model values typically differ from actual values
28-32	S 601. Calculate or use a weighted average S 602. Interpret and use information from tables and charts, including two-way frequency tables S 603. Apply counting techniques S 604. Compute a probability when the event and/or sample space are not given or obvious

	S 605. Recognize the concepts of conditional and joint probability expressed in real-world contexts S 606. Recognize the concept of independence expressed in real-world contexts
33-36	S 701. Distinguish between mean, median, and mode for a list of numbers S 702. Analyze and draw conclusions based on information from tables and charts, including two-way frequency tables S 703. Understand the role of randomization in surveys, experiments, and observational studies S 704. Exhibit knowledge of conditional and joint probability S 705. Recognize that part of the power of statistical modeling comes from looking at regularity in the differences between actual values and model values

Math Task Sheet

Part I—Understanding the ACT Math Standards and Benchmarks

- Read the ACT Math Standards at the beginning of this module, annotating and highlighting as appropriate.
- Notice characteristics of the sample questions and their relationship with the standards.
- Make note of things you notice and things you wonder.

Part II—Categorizing Questions in Compliance with the Standards

- Read Sample Questions 1-5 on p. 24 in the Preparing for the ACT Booklet.
- Based on the standards categories and scoring ranges, categorize the questions with N for Number and Quantity, AF for Algebra and Flow, G for Geometry, and S for Statistics and Probability. If possible, categorize to a scoring range and/or a specific standard.

Part III—Question Writing

- Write one sample question for each of the four categories.
- Chart your completed questions and list the ACT standard to which each question is connected. Provide a Tennessee State Standard that is connected with your question.
- This will be part of a gallery walk at the conclusion of the module.

ACT Math Task Reflection

- How can understanding the *relationship* between ACT Standards and the questions help *guide* instruction?

- Were there any surprises or “ah-ha” moments in this activity for you?

- What questions do you have about the ACT Standards and their relation to instruction in Tennessee?

ACT Math Task Part Two

Part I—Integrating the Standards into Instruction

- For one or more courses in your school, compare the Tennessee State Standards to the ACT Standards.
- Look for areas of commonality *as well as* areas of difference.
- Chart the similarities and differences that you notice.

Part II—Brainstorming Instructional Strategies

- Based on the chart of your findings of commonality, discuss methods and strategies that you can use to integrate ACT standards and concepts into your instruction.
- Based on the chart of your findings of differences, discuss methods and strategies that you can use to integrate ACT standards and concepts that are not as closely connected to state standards into your instruction.
- Chart the methods and strategies that you discuss to be shared as part of the gallery walk.

TN Department of Education

ACT English Standards

Reminder: The ACT College Readiness Benchmark for English is 18. Students who achieve this score have a 50 percent likelihood of achieving a B or better in a first-year English Composition course at a typical college. Knowledge and skills highly likely to be demonstrated by students who meet the Benchmark are in bold.

Score Range	PRODUCTION OF WRITING Topic Development in Terms of Purpose and Focus (TOD)
13-15	**TOD 201. Delete material because it is obviously irrelevant in terms of the topic of the essay**
16-19	**TOD 301 Delete material because it is obviously irrelevant in terms of the focus of the essay** **TOD 302. Identify the purpose of a word or phrase when the purpose is simple (e.g., identifying a person, defining a basic term, using common descriptive adjectives)** **TOD 303. Determine whether a simple essay has met a straightforward goal**
20-23	TOD 401. Determine relevance of material in terms of the focus of the essay TOD 402. Identify the purpose of a word or phrase when the purpose is straightforward (e.g., describing a person, giving examples) TOD 403. Use a word, phrase, or sentence to accomplish
24-27	TOD 501. Determine relevance of material in terms of the focus of the paragraph TOD 502. Identify the purpose of a word, phrase, or sentence when the purpose is fairly straightforward (e.g., identifying traits, giving reasons, explaining motivations) TOD 503. Determine whether an essay has met a specified goal TOD 504. Use a word, phrase, or sentence to accomplish a fairly straightforward purpose (e.g., sharpening an essay's focus, illustrating a given statement)
28-32	TOD 601. Determine relevance when considering material that is plausible but potentially irrelevant at a given point in the essay TOD 602. Identify the purpose of a word, phrase, or sentence when the purpose is subtle (e.g., supporting a later point, establishing tone) or when the best decision is to delete the text in question TOD 603. Use a word, phrase, or sentence to accomplish a subtle purpose (e.g., adding emphasis or supporting detail, expressing meaning through connotation)

33-36	TOD 701. Identify the purpose of a word, phrase, or sentence when the purpose is complex (e.g., anticipating a reader's need for background information) or requires a thorough understanding of the paragraph and essay TOD 702. Determine whether a complex essay has met a specified goal TOD 703. Use a word, phrase, or sentence to accomplish a complex purpose, often in terms of the focus of the essay

TN Department of Education

ACT English Standards

Scoring Range	PRODUCTION OF WRITING Organization, Unity, and Cohesion (ORG)
13-15	**ORG 201. Determine the need for transition words or phrases to establish time relationships in simple narrative essays (e.g., then, this time)**
16-19	**ORG 301. Determine the most logical place for a sentence in a paragraph** **ORG 302. Provide a simple conclusion to a paragraph or essay (e.g., expressing one of the essay's main ideas)**
20-23	ORG 401. Determine the need for transition words or phrases to establish straightforward logical relationships (e.g., first, afterward, in response) ORG 402. Determine the most logical place for a sentence in a straightforward essay ORG 403. Provide an introduction to a straightforward paragraph ORG 404. Provide a straightforward conclusion to a paragraph or essay (e.g., summarizing an essay's main idea or ideas) ORG 405. Rearrange the sentences
24-27	ORG 501. Determine the need for transition words or phrases to establish subtle logical relationships within and between sentences ORG 502. Provide a fairly straightforward introduction or conclusion to or transition within a paragraph or essay ORG 503. Rearrange the sentences in a fairly straightforward paragraph for the sake of logic ORG 504. Determine the best place to divide a paragraph to meet a particular rhetorical goal ORG 505. Rearrange the paragraphs in an essay for the sake of logic
28-32	ORG 601. Determine the need for transition words or phrases to establish subtle logical relationships within and between paragraphs ORG 602. Determine the most logical place for a sentence in a fairly complex essay ORG 603. Provide a subtle introduction or conclusion to or transition within a paragraph or essay (e.g., echoing an essay's theme or restating the main argument) ORG 604. Rearrange the sentences in a fairly complex paragraph for the sake of logic and coherence

33-36	ORG 701. Determine the need for transition words or phrases, basing decisions on a thorough understanding of the paragraph and essay ORG 702. Provide a sophisticated introduction or conclusion to or transition within a paragraph or essay, basing decisions on a thorough understanding of the paragraph and essay (e.g., linking the conclusion to one of the essay's main images)

ACT English Standards

Scoring Range	KNOWLEDGE OF LANGUAGE Knowledge of Language (KLA)
13-15	**KLA 201. Revise vague, clumsy, and confusing writing that creates obvious logic problems**
16-19	**KLA 301. Delete obviously redundant and wordy material** **KLA 302. Revise expressions that deviate markedly from the style and tone of the essay**
20-23	KLA 401. Delete redundant and wordy material when the problem is contained within a single phrase (e.g., "alarmingly startled," "started by reaching the point of beginning") KLA 402. Revise expressions that deviate from the style and tone of the essay KLA 403. Determine the need for conjunctions to create straightforward logical links between clauses KLA 404. Use the word or phrase most appropriate in terms of the content of the sentence when the vocabulary is relatively common
24-27	KLA 501. Revise vague, clumsy, and confusing writing KLA 502. Delete redundant and wordy material when the meaning of the entire sentence must be considered KLA 503. Revise expressions that deviate in subtle ways from the style and tone of the essay KLA 504. Determine the need for conjunctions to create logical links between clauses KLA 505. Use the word or phrase most appropriate in terms of the content of the sentence when the vocabulary is uncommon
28-32	KLA 601. Revise vague, clumsy, and confusing writing involving sophisticated language KLA 602. Delete redundant and wordy material that involves fairly sophisticated language (e.g., "the outlook of an aesthetic viewpoint") or that sounds acceptable as conversational English KLA 603. Determine the need for conjunctions to create subtle logical links between clauses KLA 604. Use the word or phrase most appropriate in terms of the content of the sentence when the vocabulary is fairly sophisticated

33-36	KLA 701. Delete redundant and wordy material that involves sophisticated language or complex concepts or where the material is redundant in terms of the paragraph or essay as a whole KLA 702. Use the word or phrase most appropriate in terms of the content of the sentence when the vocabulary is sophisticated

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ACT English Standards

Scoring Range	CONVENTIONS OF STANDARD ENGLISH GRAMMAR, USAGE, AND PUNCTUATION Sentence Structure and Formation (SST)
13-15	**SST 201. Determine the need for punctuation or conjunctions to join simple clauses** **SST 202. Recognize and correct inappropriate shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences**
16-19	**SST 301. Determine the need for punctuation or conjunctions to correct awkward sounding** **fragments and fused sentences as well as obviously faulty subordination and coordination of clauses** **SST 302. Recognize and correct inappropriate shifts in verb tense and voice when the meaning of the entire sentence must be considered**
20-23	SST 401. Recognize and correct marked disturbances in sentence structure (e.g., faulty placement of adjectives, participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers, lack of parallelism within a simple series of verbs)
24-27	SST 501. Recognize and correct disturbances in sentence structure (e.g., faulty placement of phrases, faulty coordination and subordination of clauses, lack of parallelism within a simple series of phrases) SST 502. Maintain consistent and logical verb tense and pronoun person on the basis of the preceding clause or sentence.
28-32	SST 601. Recognize and correct subtle disturbances in sentence structure (e.g., danglers where the intended meaning is clear but the sentence is ungrammatical, faulty subordination and coordination of clauses in long or involved sentences) SST 602. Maintain consistent and logical verb tense and voice and pronoun person on the basis of the paragraph or essay as a whole
33-36	SST 701. Recognize and correct very subtle disturbances in sentence structure (e.g., weak conjunctions between independent clauses, run-ons that would be acceptable in conversational English, lack of parallelism within a complex series of phrases or clauses)

ACT English Standards

Scoring Range	CONVENTIONS OF STANDARD ENGLISH GRAMMAR, USAGE, AND PUNCTUATION Usage Conventions (USG)
13-15	**USG 201. Form the past tense and past participle of irregular but commonly used verbs** **USG 202. Form comparative and superlative adjectives**
16-19	**USG 301. Determine whether an adjective form or an adverb form is called for in a given situation** **USG 302. Ensure straightforward subject-verb agreement** **USG 303. Ensure straightforward pronoun-antecedent agreement** **USG 304. Use idiomatically appropriate prepositions in simple contexts** **USG 305. Use the appropriate word in frequently confused pairs (e.g., there and their, past and passed, led and lead)**
20-23	USG 401. Use the correct comparative or superlative adjective or adverb form depending on context (e.g., "He is the oldest of my three brothers") USG 402. Ensure subject-verb agreement when there is some text between the subject and verb USG 403. Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., long for, appeal to) USG 404. Recognize and correct expressions that deviate from idiomatic English
24-27	USG 501. Form simple and compound verb tenses, both regular and irregular, including forming verbs by using have rather than of (e.g., would have gone, not would of gone) USG 502. Ensure pronoun-antecedent agreement when the pronoun and antecedent occur in separate clauses or sentences USG 503. Recognize and correct vague and ambiguous pronouns
28-32	USG 601. Ensure subject-verb agreement in some challenging situations (e.g., when the subject-verb order is inverted or when the subject is an indefinite pronoun) USG 602. Correctly use reflexive pronouns, the possessive pronouns its and your, and the relative pronouns who and whom USG 603. Use the appropriate word in less-common confused pairs (e.g., allude and elude)

33-36	USG 701. Ensure subject-verb agreement when a phrase or clause between the subject and verb suggests a different number for the verb USG 702. Use idiomatically and contextually appropriate prepositions in combination with verbs in situations involving sophisticated language or complex concepts

Department of Education

ACT English Standards

Scoring Range	CONVENTIONS OF STANDARD ENGLISH GRAMMAR, USAGE, AND PUNCTUATION Punctuation Conventions (PUN)
13-15	**PUN 201. Delete commas that create basic sense problems (e.g., between verb and direct object)**
16-19	**PUN 301. Delete commas that markedly disturb sentence flow (e.g., between modifier and modified element)** **PUN 302. Use appropriate punctuation in straightforward situations (e.g., simple items in a series)**
20-23	PUN 401. Delete commas when an incorrect understanding of the sentence suggests a pause that should be punctuated (e.g., between verb and direct object clause) PUN 402. Delete apostrophes used incorrectly to form plural nouns PUN 403. Use commas to avoid obvious ambiguity (e.g., to set off a long introductory element from the rest of the sentence when a misreading is possible) PUN 404. Use commas to set off simple parenthetical elements
24-27	PUN 501. Delete commas in long or involved sentences when an incorrect understanding of the sentence suggests a pause that should be punctuated (e.g., between the elements of a compound subject or compound verb joined by and) PUN 502. Recognize and correct inappropriate uses of colons and semicolons PUN 503. Use punctuation to set off complex parenthetical elements PUN 504. Use apostrophes to form simple possessive nouns
28-32	PUN 601. Use commas to avoid ambiguity when the syntax or language is sophisticated (e.g., to set off a complex series of items) PUN 602. Use punctuation to set off a nonessential/nonrestrictive appositive or clause PUN 603. Use apostrophes to form possessives, including irregular plural nouns PUN 604. Use a semicolon to link closely related independent clauses
33-36	PUN 701. Delete punctuation around essential/restrictive appositives or clauses PUN 702. Use a colon to introduce an example or an elaboration

ACT English Task Sheet

Part I—Understanding the ACT English Standards and Benchmarks

- Read the ACT English Standards at the beginning of this module, annotating and highlighting as appropriate.
- Notice characteristics of the sample questions and their relationship with the standards.
- Make note of things you notice and things you wonder.

Part II—Categorizing Questions in Compliance with the Standards

- Read questions 1-5 on p. 12 in the Preparing for the ACT Booklet.
- Based on the standards categories and scoring ranges, categorize the questions with TD for Topic Development, ORG for Organization, Unity, and Clarity, KLA for Knowledge of Language, SST for Sentence Structure Formation, USG for Usage Conventions, and PUN for Punctuation Conventions. If possible, categorize to a scoring range and/or a specific standard.

Part III—Question Writing

- Write one to two sample questions for at least three categories.
- Chart your completed questions, and list the standard to which each question is connected. Provide a Tennessee Standard that is connected with your question.
- This will be part of a gallery walk at the conclusion of the module.

ACT English Task Reflection

- How can understanding the *relationship* between ACT Standards and the questions help *guide* instruction?

- Were there any surprises or “ah-ha” moments in this activity for you?

- What questions do you have about the ACT Standards and their relation to instruction in Tennessee?

ACT English Task Part Two

Part I—Integrating the Standards into Instruction

- For one or more courses in your school, compare the Tennessee State Standards to the ACT Standards.
- Look for areas of commonality *as well as* areas of difference.
- Chart the similarities and differences that you notice.

Part II—Brainstorming Instructional Strategies

- Based on the chart of your findings of commonality, discuss methods and strategies that you can use to integrate ACT standards and concepts into your instruction.
- Based on the chart of your findings of differences, discuss methods and strategies that you can use to integrate ACT standards and concepts that are not as closely connected to state standards into your instruction.
- Chart the methods and strategies that you discuss to be shared as part of the gallery walk.

ACT Reading Standards

Reminder: The ACT College Readiness Benchmark for Reading is 22. Students who achieve this score have a 50 percent likelihood of achieving a B or better in a first-year Social Science course at a typical college. Knowledge and skills highly likely to be demonstrated by students who meet the Benchmark are in bold.

Scoring Range	KEY IDEAS AND DETAILS Close Reading (CLR)
13-15	**CLR 201. Locate basic facts (e.g., names, dates, events) clearly stated in a passage** **CLR 202. Draw simple logical conclusions about the main characters in somewhat challenging literary narratives**
16-19	**CLR 301. Locate simple details at the sentence and paragraph level in somewhat challenging passages** **CLR 302. Draw simple logical conclusions in somewhat challenging passages**
20-23	**CLR 401. Locate important details in somewhat challenging passages** **CLR 402. Draw logical conclusions in somewhat challenging passages** **CLR 403. Draw simple logical conclusions in more challenging passages** **CLR 404. Paraphrase some statements as they are used in somewhat challenging passages**
24-27	CLR 501. Locate and interpret minor or subtly stated details in somewhat challenging passages CLR 502. Locate important details in more challenging passages CLR 503. Draw subtle logical conclusions in somewhat challenging passages CLR 504. Draw logical conclusions in more challenging passages CLR 505. Paraphrase virtually any statement as it is used in somewhat challenging passages CLR 506. Paraphrase some statements
28-32	CLR 601. Locate and interpret minor or subtly stated details in more challenging passages CLR 602. Locate important details in complex passages CLR 603. Draw subtle logical conclusions in more challenging passages CLR 604. Draw simple logical conclusions in complex passages CLR 605. Paraphrase virtually any statement as it is used in more challenging passages

33-36	CLR 701. Locate and interpret minor or subtly stated details in complex passages CLR 702. Locate important details in highly complex passages CLR 703. Draw logical conclusions in complex passages CLR 704. Draw simple logical conclusions in highly complex passages CLR 705. Draw complex or subtle logical conclusions, often by synthesizing information from different portions of the passage CLR 706. Paraphrase statements as they are used in complex passages

ACT Reading Standards

Scoring Range	KEY IDEAS AND DETAILS Central Ideas, Themes, and Summaries (IDT)
13-15	**IDT 201. Identify the topic of passages and distinguish the topic from the central idea or theme**
16-19	**IDT 301. Identify a clear central idea in straightforward paragraphs in somewhat challenging literary narratives**
20-23	**IDT 401. Infer a central idea in straightforward paragraphs in somewhat challenging literary narratives** **IDT 402. Identify a clear central idea or theme in somewhat challenging passages or their paragraphs** **IDT 403. Summarize key supporting ideas and details in somewhat challenging passages**
24-27	IDT 501. Infer a central idea or theme in somewhat challenging passages or their paragraphs IDT 502. Identify a clear central idea or theme in more challenging passages or their paragraphs IDT 503. Summarize key supporting ideas and details in more challenging passages
28-32	IDT 601. Infer a central idea or theme in more challenging passages or their paragraphs IDT 602. Summarize key supporting ideas and details in complex passages
33-36	IDT 701. Identify or infer a central idea or theme in complex passages or their paragraphs IDT 702. Summarize key supporting ideas and details in highly complex passages

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ACT Reading Standards

Scoring Range	KEY IDEAS AND DETAILS Relationships (REL)
13-15	**REL 201. Determine when (e.g., first, last, before, after) an event occurs in somewhat challenging passages** **REL 202. Identify simple cause-effect relationships within a single sentence in a passage**
16-19	**REL 301. Identify clear comparative relationships between main characters in somewhat challenging literary narratives** **REL 302. Identify simple cause-effect relationships within a single paragraph in somewhat challenging literary narratives**
20-23	**REL 401. Order simple sequences of events in somewhat challenging literary narratives** **REL 402. Identify clear comparative relationships in somewhat challenging passages** **REL 403. Identify clear cause-effect relationships in somewhat challenging passages**
24-27	REL 501. Order sequences of events in somewhat challenging passages REL 502. Understand implied or subtly stated comparative relationships in somewhat challenging passages REL 503. Identify clear comparative relationships in more challenging passages REL 504. Understand implied or subtly stated cause-effect relationships in somewhat challenging passages REL 505. Identify clear cause-effect relationships in more challenging passages
28-32	REL 601. Order sequences of events in more challenging passages REL 602. Understand implied or subtly stated comparative relationships in more challenging passages REL 603. Identify clear comparative relationships in complex passages REL 604. Understand implied or subtly stated cause-effect relationships in more challenging passages REL 605. Identify clear cause-effect relationships in complex passages
33-36	REL 701. Order sequences of events in complex passages REL 702. Understand implied or subtly stated comparative relationships in complex passages REL 703. Identify clear comparative relationships in highly complex passages REL 704. Understand implied or subtly stated cause-effect relationships in complex passages REL 705. Identify clear cause-effect relationships in highly complex passages

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ACT Reading Standards

Scoring Range	CRAFT AND STRUCTURE Word Meanings and Word Choice (WME)
13-15	**WME 201. Understand the implication of a familiar word or phrase and of simple descriptive language**
16-19	**WME 301. Analyze how the choice of a specific word or phrase shapes meaning or tone in somewhat challenging passages when the effect is simple** **WME 302. Interpret basic figurative language as it is used in a passage**
20-23	**WME 401. Analyze how the choice of a specific word or phrase shapes meaning or tone in somewhat challenging passages** **WME 402. Interpret most words and phrases as they are used in somewhat challenging passages, including determining technical, connotative, and figurative meanings**
24-27	WME 501. Analyze how the choice of a specific word or phrase shapes meaning or tone in somewhat challenging passages when the effect is subtle WME 502. Analyze how the choice of a specific word or phrase shapes meaning or tone in more challenging passages WME 503. Interpret virtually any word or phrase as it is used in somewhat challenging passages, including determining technical, connotative, and figurative meanings WME 504. Interpret most words and phrases as they are used in more challenging passages, including determining technical, connotative, and figurative meanings
28-32	WME 601. Analyze how the choice of a specific word or phrase shapes meaning or tone in complex passages WME 602. Interpret virtually any word or phrase as it is used in more challenging passages, including determining technical, connotative, and figurative meanings WME 603. Interpret words and phrases in a passage that makes consistent use of figurative, general academic, domain-specific, or otherwise difficult language
33-36	WME 701. Analyze how the choice of a specific word or phrase shapes meaning or tone in passages when the effect is subtle or complex WME 702. Interpret words and phrases as they are used in complex passages, including determining technical, connotative, and figurative meanings WME 703. Interpret words and phrases in a passage that makes extensive use of figurative, general academic, domain-specific, or otherwise difficult language

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ACT Reading Standards

Scoring Range	CRAFT AND STRUCTURE Text Structure (TST)
13-15	**TST 201. Analyze how one or more sentences in passages relate to the whole passage when the function is stated or clearly indicated**
16-19	**ST 301. Analyze how one or more sentences in somewhat challenging passages relate to the whole passage when the function is simple** **TST 302. Identify a clear function of straightforward paragraphs in somewhat challenging literary narratives**
20-23	**TST 401. Analyze how one or more sentences in somewhat challenging passages relate to the whole passage** **TST 402. Infer the function of straightforward paragraphs in somewhat challenging literary narratives** **TST 403. Identify a clear function of paragraphs in somewhat challenging passages** **TST 404. Analyze the overall structure of somewhat challenging passages**
24-27	TST 501. Analyze how one or more sentences in somewhat challenging passages relate to the whole passage when the function is subtle TST 502. Analyze how one or more sentences in more challenging passages relate to the whole passage TST 503. Infer the function of paragraphs in somewhat challenging passages TST 504. Identify a clear function of paragraphs in more challenging passages TST 505. Analyze the overall structure of more challenging passages
28-32	TST 601. Analyze how one or more sentences in complex passages relate to the whole passage TST 602. Infer the function of paragraphs in more challenging passages TST 603. Analyze the overall structure of complex passages
33-36	TST 701. Analyze how one or more sentences in passages relate to the whole passage when the function is subtle or complex TST 702. Identify or infer the function of paragraphs in complex passages TST 703. Analyze the overall structure of highly complex passages

ACT Reading Standards

Scoring Range	CRAFT AND STRUCTURE Purpose and Point of View (PPV)
13-15	**PPV 201. Recognize a clear intent of an author or narrator in somewhat challenging literary narratives**
16-19	**PPV 301. Recognize a clear intent of an author or narrator in somewhat challenging passages**
20-23	**PPV 401. Identify a clear purpose of somewhat challenging passages and how that purpose shapes content and style** **PPV 402. Understand point of view in somewhat challenging passages**
24-27	PPV 501. Infer a purpose in somewhat challenging passages and how that purpose shapes content and style PPV 502. Identify a clear purpose of more challenging passages and how that purpose shapes content and style PPV 503. Understand point of view in more challenging passages
28-32	PPV 601. Infer a purpose in more challenging passages and how that purpose shapes content and style PPV 602. Understand point of view in complex passages
33-36	PPV 701. Identify or infer a purpose in complex passages and how that purpose shapes content and style PPV 702. Understand point of view in highly complex passages

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ACT Reading Standards

Scoring Range	INTEGRATION OF KNOWLEDGE AND IDEAS Arguments (ARG)
13-15	**ARG 201. Analyze how one or more sentences in passages offer reasons for or support a claim when the relationship is clearly indicated**
16-19	**ARG 301. Analyze how one or more sentences in somewhat challenging passages offer reasons for or support a claim when the relationship is simple**
20-23	**ARG 401. Analyze how one or more sentences in somewhat challenging passages offer reasons for or support a claim** **ARG 402. Identify a clear central claim in somewhat challenging passages**
24-27	ARG 501. Analyze how one or more sentences in more challenging passages offer reasons for or support a claim ARG 502. Infer a central claim in somewhat challenging passages ARG 503. Identify a clear central claim in more challenging passages
28-32	ARG 601. Analyze how one or more sentences in complex passages offer reasons for or support a claim ARG 602. Infer a central claim in more challenging passages
33-36	ARG 701. Analyze how one or more sentences in passages offer reasons for or support a claim when the relationship is subtle or complex ARG 702. Identify or infer a central claim in complex passages ARG 703. Identify a clear central claim in highly complex passages

ACT Reading Standards

Scoring Range	INTEGRATION OF KNOWLEDGE AND IDEAS Multiple Texts (SYN)
13-15	**SYN 201. Make simple comparisons between two passages**
16-19	**SYN 301. Make straightforward comparisons between two passages**
20-23	**SYN 401. Draw logical conclusions using information from two literary narratives**
24-27	SYN 501. Draw logical conclusions using information from two informational texts
28-32	SYN 601. Draw logical conclusions using information from multiple portions of two literary narratives
33-36	SYN 701. Draw logical conclusions using information from multiple portions of two informational texts

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ACT Reading Task Sheet

Part I—Understanding the ACT Reading Standards and Benchmarks

- Read the ACT Reading Standards at the beginning of this module, annotating and highlighting as appropriate.
- Notice characteristics of the sample questions and their relationship with the standards.
- Make note of things you notice and things you wonder.

Part II—Categorizing Questions in Compliance with the Standards

- Read questions 1-5 on page 33 in the Preparing for the ACT Booklet. The questions correspond to the passage on p. 32.
- Based on the standards categories and scoring ranges, categorize the questions with CLR for Close Reading, IDT for Central Ideas, Themes, and Summaries, REL for Relationships, WME for Word Meanings and Choice, TST for Text Structure, PPV for Point of View, ARG for Arguments, and SYN for Multiple Texts. If possible, categorize to a scoring range and/or a specific standard.

Part III—Question Writing

- Write one sample question for at least four of the Standards categories.
- Chart your completed questions, and list the standard to which each question is connected. Provide a Tennessee Standard that is connected with your question.
- This will be part of a gallery walk at the conclusion of the module.

ACT Reading Task Reflection

- How can understanding the *relationship* between ACT Standards and the questions help *guide* instruction?

- Were there any surprises or “ah-ha” moments in this activity for you?

- What questions do you have about the ACT Standards and their relation to instruction in Tennessee?

ACT Reading Task Part Two

Part I—Integrating the Standards into Instruction

- For one or more courses in your school, compare the Tennessee State Standards to the ACT Standards.
- Look for areas of commonality *as well as* areas of difference.
- Chart the similarities and differences that you notice.

Part II—Brainstorming Instructional Strategies

- Based on the chart of your findings of commonality, discuss methods and strategies that you can use to integrate ACT standards and concepts into your instruction.
- Based on the chart of your findings of differences, discuss methods and strategies that you can use to integrate ACT standards and concepts that are not as closely connected to state standards into your instruction.
- Chart the methods and strategies that you discuss to be shared as part of the gallery walk.

ACT Science Standards

Reminder: The ACT College Readiness Benchmark for Science is 23. Students who achieve this score have a 50 percent likelihood of achieving a B or better in a first-year Biology course at a typical college. Knowledge and skills highly likely to be demonstrated by students who meet the Benchmark are in bold.

Scoring Range	Interpretation of Data (IOD)
13-15	**IOD 201. Select one piece of data from a simple data presentation (e.g., a simple food web diagram)** **IOD 202. Identify basic features of a table, graph, or diagram (e.g., units of measurement)** **IOD 203. Find basic information in text that describes a simple data presentation**
16-19	**IOD 301. Select two or more pieces of data from a simple data presentation** **IOD 302. Understand basic scientific terminology** **IOD 303. Find basic information in text that describes a complex data presentation** **IOD 304. Determine how the values of variables change as the value of another variable changes in a simple data presentation**
20-23	**IOD 401. Select data from a complex data presentation (e.g., a phase diagram)** **IOD 402. Compare or combine data from a simple data presentation (e.g., order or sum data from a table)** **IOD 403. Translate information into a table, graph, or diagram** **IOD 404. Perform a simple interpolation or simple extrapolation using data in a table or graph**
24-27	IOD 501. Compare or combine data from two or more simple data presentations (e.g., categorize data from a table using a scale from another table) IOD 502. Compare or combine data from a complex data presentation IOD 503. Determine how the values of variables change as the value of another variable changes in a complex data presentation IOD 504. Determine and/or use a simple (e.g., linear) mathematical relationship that exists between data IOD 505. Analyze presented information when given new, simple information

28-32	IOD 601. Compare or combine data from a simple data presentation with data from a complex data presentation IOD 602. Determine and/or use a complex (e.g., nonlinear) mathematical relationship that exists between data IOD 603. Perform a complex interpolation or complex extrapolation using data in a table or graph
33-36	IOD 701. Compare or combine data from two or more complex data presentations IOD 702. Analyze presented information when given new, complex information

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ACT Science Standards

Scoring Range	Scientific Investigation (SIN)
13-15	**SIN 201. Find basic information in text that describes a simple experiment** **SIN 202. Understand the tools and functions of tools used in a simple experiment**
16-19	**SIN 301. Understand the methods used in a simple experiment** **SIN 302. Understand the tools and functions of tools used in a complex experiment** **SIN 303. Find basic information in text that describes a complex experiment**
20-23	**SIN 401. Understand a simple experimental design** **SIN 402. Understand the methods used in a complex experiment** **SIN 403. Identify a control in an experiment** **SIN 404. Identify similarities and differences between experiments** **SIN 405. Determine which experiments utilized a given tool, method, or aspect** **of design**
24-27	SIN 501. Understand a complex experimental design SIN 502. Predict the results of an additional trial or measurement in an experiment SIN 503. Determine the experimental conditions that would produce specified results
28-32	SIN 601. Determine the hypothesis for an experiment SIN 602. Determine an alternate method for testing a hypothesis
33-36	SIN 701. Understand precision and accuracy issues SIN 702. Predict the effects of modifying the design or methods of an experiment SIN 703. Determine which additional trial or experiment could be performed to enhance or evaluate experimental results

ACT Science Standards

Scoring Range	Evaluation of Models, Inferences, and Experimental Results (EMI)
13-15	**EMI 201. Find basic information in a model (conceptual)**
16-19	**EMI 301. Identify implications in a model** **EMI 302. Determine which models present certain basic information**
20-23	**EMI 401. Determine which simple hypothesis, prediction, or conclusion is, or is not, consistent with a data presentation, model, or piece of information in text** **EMI 402. Identify key assumptions in a model** **EMI 403. Determine which models imply certain information** **EMI 404. Identify similarities and differences between models**
24-27	EMI 501. Determine which simple hypothesis, prediction, or conclusion is, or is not, consistent with two or more data presentations, models, and/or pieces of information in text EMI 502. Determine whether presented information, or new information, supports or contradicts a simple hypothesis or conclusion, and why EMI 503. Identify the strengths and weaknesses of models EMI 504. Determine which models are supported or weakened by new information EMI 505. Determine which experimental results or models support or contradict a hypothesis, prediction, or conclusion
28-32	EMI 601. Determine which complex hypothesis, prediction, or conclusion is, or is not, consistent with a data presentation, model, or piece of information in text EMI 602. Determine whether presented information, or new information, supports or weakens a model, and why EMI 603. Use new information to make a prediction based on a model
33-36	EMI 701. Determine which complex hypothesis, prediction, or conclusion is, or is not, consistent with two or more data presentations, models, and/or pieces of information in text EMI 702. Determine whether presented information, or new information, supports or contradicts a complex hypothesis or conclusion, and why

ACT Science Standards

ACT College and Career Readiness Standards for Science are measured in rich and authentic contexts based on science content that students encounter in science courses. This content includes:

Life Science/Biology			
• Animal behavior • Animal development and growth • Body systems	• Cell structure and processes • Ecology • Evolution • Genetics • Homeostasis	• Life cycles • Molecular basis of heredity • Origin of life • Photosynthesis	• Plant development, growth, structure • Populations • Taxonomy
Physical Science/Chemistry, Physics			
• Atomic structure • Chemical bonding, equations, nomenclature, reactions • Electrical circuits	• Elements, compounds, mixtures • Force and motions • Gravitation • Heat and work	• Kinetic and potential energy • Magnetism • Momentum • The periodic table • Properties of solutions	• Sound and light • States, classes, and properties of matter • Waves
Earth and Space Science			
• Earthquakes and volcanoes • Earth's atmosphere • Earth's resources • Fossils and geological time	• Geochemical cycles • Groundwater • Lakes, rivers, oceans • Mass movements	• Plate tectonics • Rocks, minerals • Solar system • Stars, galaxies, and the universe	• Water cycle • Weather and climate • Weathering and erosion

ACT Science Task Sheet

Part I—Understanding the ACT Science Standards and Benchmarks

- Read the ACT Science Standards at the beginning of this module, annotating and highlighting as appropriate.
- Notice characteristics of the sample questions and their relationship with the standards.
- Make note of things you notice and things you wonder.

Part II—Categorizing Questions in Compliance with the Standards

- Read questions 1-5 on pages 40-41 in the Preparing for the ACT Booklet.
- Based on the standards categories and scoring ranges, categorize the questions with IOD for Interpretation of Data, SIN for Scientific Investigation, and EMI for Evaluation of Models, Inferences, and Experimental Results. If possible, categorize to a scoring range and/or a specific standard.

Part III—Question Writing

- Write at least one sample question for each of the three categories.
- Chart your completed questions, and list the standard to which each question is connected. Provide a Tennessee Standard that is connected with your question.
- These questions will be part of a gallery walk at the conclusion of the module.

ACT Science Task Reflection

- How can understanding the *relationship* between ACT Standards and the questions help *guide* instruction?

- Were there any surprises or “ah-ha” moments in this activity for you?

- What questions do you have about the ACT Standards and their relation to instruction in Tennessee?

ACT Science Task Part Two

Part I—Integrating the Standards into Instruction

- For one or more courses in your school, compare the Tennessee State Standards to the ACT Standards.
- Look for areas of commonality *as well as* areas of difference.
- Chart the similarities and differences that you notice.

Part II—Brainstorming Instructional Strategies

- Based on the chart of your findings of commonality, discuss methods and strategies that you can use to integrate ACT standards and concepts into your instruction.
- Based on the chart of your findings of differences, discuss methods and strategies that you can use to integrate ACT standards and concepts that are not as closely connected to state standards into your instruction.
- Chart the methods and strategies that you discuss to be shared as part of the gallery walk.

Culminating Gallery Walk

Part I

- Gather your findings from the previous tasks.
- Charts for your group should include noticings about the standards, questions written by the group including links to Tennessee and ACT standards, and instructional strategies discussed by your group to integrate ACT aligned questions into classroom instruction.

Part II

- Rotate to other groups' charts.
- Using post-it notes, leave feedback for anything that you notice. This could include questions you have, suggestions for revision, or compliments for great ideas.

Whole Group Discussion

- Share your methods and strategies that you discussed in your small group. How can you integrate ACT skills into your instruction without sacrificing content instruction?

- What action steps will you take in your classroom based on this discussion?

Add changes you want to make to your daily instruction to your action plan in Module 1 on p. 37.

Critical Connections

- ACT Benchmarks connect with ACT Standards to provide a list of skills that students should master to be college and career ready.
- Many Tennessee State Standards and ACT Standards have key similarities.
- As educators, we have the opportunity to increase the rigor of our classroom instruction to help our students become college and career ready.
- Many content strands that you already teach can be slightly modified to increase student college and career readiness.

Key Idea #8

All content in the ACT standards is covered in our Tennessee state standards, but some topics may require spiraling or revisiting during **instruction**, especially in higher grade levels.

Key Idea #9

There are simple things you can do in daily instruction, such as ensuring you are asking questions similar to the ACT, to improve student **readiness**.

Closing Reflection:

What are your most important takeaways about each key idea from today? How can you apply the Key Ideas to your current role in your school? What questions do you still have?

Key Idea	Your Takeaways
Key Idea #7 Literacy across all content areas is extremely important to improving ACT scores and ensuring our students are prepared for whatever **pathway** they choose.	
Key Idea #8 All content in the ACT standards is covered in our Tennessee state standards, but some topics may require spiraling or revisiting during **instruction**, especially in higher grade levels.	
Key Idea #9 There are simple things you can do in daily instruction, such as ensuring you are asking questions similar to the ACT, to improve student **readiness**.	