# Oklahoma Academic Standards

# ENGLISH LANGUAGE ARTS

OKLAHOMA Education

## 8 Overarching Standards

The following eight standards encompass the content and competencies of English language arts:

1. **Listening and Speaking**
2. **Reading and Writing Foundations/Process**
3. **Critical Reading and Writing**
4. **Vocabulary**
5. **Language**
6. **Research**
7. **Multimodal Literacies**
8. **Independent Reading and Writing**

The eight overarching standards reinforce language arts' recursive nature, a non-linear process that involves the continuous and thoughtful refinement of concepts and skills. Each standard statement is accompanied by two strand statements—listening and speaking for Standard 1 and reading and writing for Standards 2-8. Each pair of strands contains grade-level objectives.

Standard 2 Reading and Writing Foundations includes the five strands of Phonological Awareness, Print Concepts, Phonics and Word Study, Spelling/Encoding, and Fluency. The linear order of the strands suggests a learning progression that begins with basic foundational skills and culminates in fluent readers and writers.

Concepts and skills are expressed in terms of both reading and writing to support integrated, rather than isolated, reading/writing instruction. Research supports this integrated model of English language arts, where students read to understand the meaning and composition of a text and write with readers' expectations and assumptions in mind.


The order of the standards is meant to suggest that students learn to read and write by listening and speaking (Standard 1) on their way to the ultimate goal of becoming independent, critical readers and writers (Standards 3 and 8). At the same time, speaking and listening skills will continue to be developed as students progress through the grade levels, and concepts of independent reading and writing will be introduced even in the earliest grades.

Independent reading and writing is a natural outgrowth of strong standards implementation through a rigorous curriculum. Standard 8 acknowledges students' need to grow increasingly independent for college and career readiness. Being able to work independently and seek out opportunities to read and write is a significant part of life-long learning. These skills easily transfer to test-taking, civic engagement, and citizenship.

Academic standards establish objective performance criteria. They are used as guides to develop curriculum and instruction that is engaging, challenging, and sequenced for students. Acquiring English language arts knowledge and skills is a recursive learning endeavor. Students need to revisit concepts as they develop language arts acumen at increasingly higher levels of complexity.

The eight overarching standard statements are accompanied by two strand statements—listening and speaking for Standard 1 and reading and writing for Standards 2-8. Standard 2 Reading and Writing Foundations includes five unique strands and statements related to foundational literacy skills. Every strand contains grade-level objectives.

## Standard 1: Listening and Speaking | Students will listen and speak effectively in a variety of situations.

- **Listening**: Students will develop and apply effective communication skills through active listening.
- **Speaking**: Students will develop and apply effective communication skills to share ideas through speaking.

## Standard 2: Reading and Writing Foundations | Students will develop foundational skills for reading and writing proficiency by working with sounds, letters, and text.

- **Phonological Awareness**: Students will recognize, count, and manipulate the parts of spoken words, including syllables, onset/rimes, and phonemes without using text.
- **Print Concepts**: Students will demonstrate their understanding of the organization and basic features of print.
- **Phonics and Word Study**: Students will decode words by applying phonics and word analysis skills in context and isolation.
- **Spelling/Encoding**: Students will encode and write words in context and isolation by applying phonics, spelling patterns, and structural analysis skills.
- **Fluency**: Students will read grade-level text smoothly and accurately, with appropriate expression.

## Standard 2: Reading and Writing Process | Students will use a variety of recursive reading and writing processes.

- **Reading**: Students will read and comprehend inclusive, diverse, and increasingly complex literary and informational texts.
- **Writing**: Students will engage in a recursive process that may include prewriting, drafting, revising, editing, and publishing.

## Standard 3: Critical Reading and Writing | Students will apply critical thinking skills to reading and writing.

- **Reading**: Students will analyze, interpret, and evaluate increasingly complex literary and informational texts that include a wide range of historical, cultural, ethnic, and global perspectives from a variety of genres.
- **Writing**: Students will thoughtfully and intentionally write, addressing a range of modes, purposes, and audiences.

## Standard 4: Vocabulary | Students will expand and apply their spoken and reading vocabularies to speak, read, and write effectively.

- **Reading**: Students will expand their grade-level vocabularies through reading, word study, and class discussion.
- **Writing**: Students will apply knowledge of vocabulary to speak and write effectively.

**Standard 5: Language** | Students will expand and apply knowledge of grammar, usage, mechanics, and style to comprehend texts and communicate effectively.

- **Reading**: Students will expand and apply knowledge of grammar, usage, mechanics, and style to comprehend, analyze, and/or evaluate a variety of texts.
- **Writing**: Students will expand and apply knowledge of grammar, usage, mechanics, and style to speak and write effectively, demonstrating standard usage when appropriate.

**Standard 6: Research** | Students will engage in inquiry to acquire, refine, and communicate accurate information.

- **Reading**: Students will gather, comprehend, evaluate, and synthesize researched information to acquire and refine knowledge.
- **Writing**: Students will synthesize information ethically through speaking and writing.

**Standard 7: Multimodal Literacies** | Students will comprehend and communicate knowledge through alphabetic, aural, visual, spatial, and/or gestural content.

- **Reading**: Students will comprehend and evaluate multimodal content.
- **Writing**: Students will create multimodal content to communicate effectively.

**Standard 8: Independent Reading and Writing** | Students will read and write independently for a variety of purposes and periods of time.

- **Reading**: Students will read self-selected texts independently, choosing genres to suit and expand their personal preferences and purposes.
- **Writing**: Students will write independently, intentionally selecting modes, purposes, and audiences.

## Disciplinary Literacy in Oklahoma Academic Standards

As literacy expert Dr. Timothy Shanahan explains, “Disciplinary literacy is based upon the idea that literacy and text are specialized, and even unique, across the disciplines. Historians engage in very different approaches to reading than mathematicians do, for instance. Similarly, even those who know little about math or literature can easily distinguish a science text from a literary one.” Teachers of English language arts can partner with math, social studies, science, fine arts, computer science, and world languages teachers who are also teaching their students to read, write, listen, and speak within their particular subjects through subject-specific processes and standards. In self-contained elementary classrooms, teachers can incorporate various disciplinary literacies in their lessons.

## Navigating the Standards

Oklahoma Academic Standards for English Language Arts **Grade 6**

Grade

**Standard 2: Reading and Writing Process**
Students will use a variety of recursive reading and writing processes.

Overarching Standard and Standard Statement

| Reading | Writing |
|---|---|
| Students will read and comprehend inclusive, d[illegible] and increasingly complex literary and information[illegible] | [illegible] recursive process that may include prewriting, drafting, revising, editing, and publishing. |
| **6.2.R.1** Students will summarize alphabetic and/or multimodal texts, including main idea, to demonstrate comprehension. | **6.2.W.1** Students will routinely and recursively prewrite (e.g., develop ideas and plan). |
| **6.2.R.2** [illegible] will analyze details in fiction, poetry, a[illegible]d nonfiction to distinguish genres. | **6.2.W.2** Students will routinely and recursively organize and develop ideas to compose a first draft. |
| **6.2.R.3** Students will paraphrase a paragraph in their own words to demonstrate comprehension. | **6.2.W.3** Students will ro[illegible]ly and recursively revise drafts for intended purp[illegible]nization (e.g., logicalorder a[illegible] |
| | **6.2.W.4** Students will routinely and recursively edit for correct grammar, usage, and mechanics, using various resources. |
| | **6.2.W.5** Students will routinely and recursively publish final drafts for an authentic audience (e.g., publishing digitally, performing, entering contests). |

Strands and Strand Statements

Objective Code
Grade.Standard. Strand.Objective

Objectives

# Grade 3

Students in grade 3 continue to strengthen their foundational reading and writing skills while also starting to build the critical reading and writing skills needed to proficiently read increasingly complex literary and informational texts. Students ask relevant questions and answer inferential questions, using text evidence, summarizing, and engaging in collaborative conversations. They analyze texts for literary elements and devices, point of view, and structure. Students continue to practice the writing process by writing narrative, informative, and opinion pieces. Students in grade 3 expand their grade-level vocabularies, including homophones and homographs, multiple-meaning words, and words with Anglo-Saxon roots, and apply their knowledge of those words as they communicate through speaking and writing. Students write simple and compound sentences and recognize and correct fragments. They use adjectives, prepositions, and adverbs to add detail and clarity to their writing. Students understand texts more clearly with the aid of graphic and text features and use that understanding to find, organize, and share relevant information. Students in grade 3 analyze different combinations of multimodal content to determine how best to communicate ideas and feelings. Students develop stamina for longer periods of reading and writing and autonomy in choosing what kinds of texts to read or pieces to write.

## Standard 1: Listening and Speaking

Students will listen and speak effectively in a variety of situations.

| Listening<br>Students will develop and apply effective communication skills through active listening. | Speaking<br>Students will develop and apply effective communication skills to share ideas through speaking. |
|---|---|
| 1. Students will actively listen using agreed-upon discussion rules. | 1. Students will work effectively and respectfully in diverse groups by sharing responsibility for collaborative work and recognizing individual contributions made by each group member. |
| 2. Students will actively listen and interpret a speaker's verbal messages and ask questions to clarify the speaker's purpose. | 2. Students will engage in collaborative discussions about what they are reading and writing, expressing their own ideas clearly in pairs, diverse groups, and whole-class settings. |

Standard 1 Continued

**3.1.S.3** Students will report in a group or individually on a topic or text, tell a story, or recount an experience with relevant facts, descriptive details, speaking audibly and clearly in coherent sentences.

## Standard 2: Reading and Writing Foundations

Students will develop foundational skills for reading and writing proficiency by working with sounds, letters, and text.

### Phonological Awareness

Students will recognize, count, and manipulate the parts of spoken words, including syllables, onset/rimes, and phonemes without using text.

**3.2.PA** Students will add, delete, substitute, and reverse phonemes in spoken words (e.g., add /g/ to the beginning of *listen* to say *glisten*; delete the /b/ in *bridges* to say *ridges*; substitute the /f/ in *frighten* with /b/ to say *brighten*; reverse the initial and final sounds in *safe* to say *face*).

### Print Concepts

Students will demonstrate their understanding of the organization and basic features of print.

**3.2.PC** Students will correctly form words in print and cursive and use appropriate spacing for letters, words, and sentences.

### Phonics and Word Study

Students will decode words by applying phonics and word analysis skills in context and isolation.

**3.2.PWS.1** Students will decode multisyllabic words using their knowledge of the following phonics skills:

- vowel diphthongs
- all major syllable types (i.e., closed, consonant +le, open, vowel digraphs, vowel silent e, r-controlled)

Standard 2 Continued

**3.2.PWS.2** Students will decode words by applying knowledge of structural analysis:
- contractions
- abbreviations
- common roots and related prefixes and suffixes
- morphology

**3.2.PWS.3** Students will use decoding skills and semantics in context when reading new words in a text, including multisyllabic words.

## Spelling/Encoding

Students will encode and write words in context and isolation by applying phonics, spelling patterns, and structural analysis skills.

**3.2.SE.1** Students will use correct spelling when writing the following sounds in words:
- diphthongs
- schwa (i.e., /ə/)
- silent letter combinations (e.g., *knew*, *could*, *ghost*)
- hard/soft c, g (e.g., *cover*, *celebrate*, *gorilla*, *general*)

**3.2.SE.2** Students will use correct spelling when writing the following syllable types in single-syllable and multisyllabic words:
- vowel digraphs
- consonant + -le

**3.2.SE.3** Students will use structural analysis to correctly spell the following parts of words:
- common prefixes
- common suffixes
- common spelling rules related to adding prefixes and suffixes (e.g., changing y to i, doubling a consonant)

Standard 2 Continued

## Fluency

Students will read grade-level text smoothly and accurately, with appropriate expression.

**3.2.F.1** Students will expand their sight word vocabulary by reading regularly- and irregularly-spelled words in isolation and context with increasing automaticity.

**3.2.F.2** Students will orally and accurately read grade-level text at a smooth rate with expression that connotes comprehension.

## Standard 2: Reading and Writing Process

Students will use a variety of recursive reading and writing processes.

| Reading<br>Students will read and comprehend inclusive, diverse, and increasingly complex literary and informational texts. | Writing<br>Students will engage in a recursive process that may include prewriting, drafting, revising, editing, and publishing. |
|---|---|
| 1. Students will determine the main idea and supporting details of a text. | 1. Students will routinely use a recursive process to prewrite, organize, and develop narrative, informative, and opinion drafts that display evidence of paragraphing. |
| 2. Students will identify elements of various genres in fiction, poetry, and nonfiction texts. | 2. Students will routinely use a recursive process to revise content for clarity, coherence, and organization (e.g., logical order and transitions). |
| 3. Students will summarize and sequence the important events of a story. | 3. Students will routinely and recursively edit drafts for punctuation, capitalization, and correctly-spelled grade-level words, using resources as needed. |
| 4. Students will summarize facts and details from an informational text. | 4. Students will routinely use a recursive process to publish final drafts for an authentic audience (e.g., reading aloud, posting on blog, displaying, entering contest). |

## Standard 3: Critical Reading and Writing

Students will apply critical thinking skills to reading and writing.

### Reading

Students will analyze, interpret, and evaluate increasingly complex literary and informational texts that include a wide range of historical, cultural, ethnic, and global perspectives from a variety of genres.

1. Students will determine if the author's purpose is to entertain, inform, or persuade.
2. Students will determine whether a grade-level literary text is narrated in first- or third-person point of view.
3. Students will find examples of literary elements:
   - setting
   - plot
   - characters
   - characterization
4. Students will find examples of literary devices:
   - personification
   - hyperbole
   - simile
   - alliteration
   - onomatopoeia
5. Students will answer inferential questions, using a text to support answers.
6. Students will distinguish fact from opinion in an informational text.

### Writing

Students will thoughtfully and intentionally write, addressing a range of modes, purposes, and audiences.

1. Students will write narratives incorporating:
   - setting
   - plot
   - characters
   - characterization
2. Students will write facts about a subject, including a main idea with supporting details, in multiple paragraphs with transitional words and phrases.
3. Students will write an opinion about a topic and provide relevant evidence as support in multiple paragraphs with transitional words and phrases.

Standard 3 Continued

**3.3.R.7** Students will describe the structure of an informational text:
- problem/solution
- description
- sequential

## Standard 4: Vocabulary

Students will expand and apply their spoken and reading vocabularies to speak, read, and write effectively.

| Reading<br>Students will expand their grade-level vocabularies through reading, word study, and class discussion. | Writing<br>Students will apply knowledge of vocabulary to speak and write effectively. |
|---|---|
| 1. Students will identify relationships among words, including synonyms, antonyms, homophones, and homographs. | 1. Students will use grade-level vocabulary in writing to clearly communicate ideas. |
| 2. Students will use context clues to clarify the meaning of words. | 2. Students will use precise vocabulary in writing for the intended mode and effect on the audience. |
| 3. Students will use word parts (e.g., affixes, Anglo-Saxon roots, stems) to define and determine the meaning of new words. | |
| 4. Students will consult reference materials (e.g., dictionaries, glossaries, thesauruses) to comprehend the words in a text. | |
| 5. Students will acquire new grade-level vocabulary, relate new words to prior knowledge, and apply vocabulary in various contexts. | |

## Standard 5: Language

Students will expand and apply knowledge of grammar, usage, mechanics, and style to comprehend texts and communicate effectively.

| Reading<br>Students will expand and apply knowledge of grammar, usage, mechanics, and style to comprehend, analyze, and/or evaluate a variety of texts. | Writing<br>Students will expand and apply knowledge of grammar, usage, mechanics, and style to speak and write effectively, demonstrating standard usage when appropriate. |
|---|---|
| 1. Students will recognize simple and compound sentences. | 1. Students will compose simple and compound declarative, interrogative, imperative, and exclamatory sentences, avoiding and correcting fragments. |
| 2. Students will recognize parts of speech in sentences:<br>• concrete, abstract, and possessive nouns<br>• different types of verbs (i.e., action, linking, helping) and their roles in a sentence<br>• the complete subject and complete predicate of a sentence<br>• possessive adjectives<br>• prepositional phrases<br>• possessive pronouns and the nouns they replace<br>• coordinating conjunctions (i.e., *for*, *and*, *nor*, *but*, *or*, *yet*, *so*)<br>• adverbs of frequency (e.g., *always*, *often*, *never*) | 2. Students will use nouns, verbs, adjectives, prepositions, and adverbs to add clarity and variety to their writing. |
| | 3. Students will capitalize and punctuate titles of respect, words in titles, and geographical names. |
| | 4. Students will use periods with declarative and imperative sentences, question marks with interrogative sentences, and exclamation points with exclamatory sentences. |
| | 5. Students will use apostrophes to form complex contractions (e.g., *should've*, *won't*, *y'all*) and to show possession. |
| | 6. Students will use commas before a coordinating conjunction and to separate individual words in a series. |
| | 7. Students will use a colon to indicate time. |
| | 8. Students will use quotation marks to indicate dialogue. |

## Standard 6: Research

Students will engage in inquiry to acquire, refine, and communicate accurate information.

| Reading<br>Students will gather, comprehend, evaluate, and synthesize researched information to acquire and refine knowledge. | Writing<br>Students will synthesize information ethically through speaking and writing. |
|---|---|
| 1. Students will conduct research to answer questions, including self-generated questions, and to build knowledge. | 1. Students will choose a topic of interest and generate several questions about it for research. |
| 2. Students will identify and use text features (e.g., graphics, captions, subheadings, italics, charts, tables, legends) to comprehend informational texts. | 2. Students will begin to organize information found during research, following a modified citation style (i.e., author, title, publication year). |
| 3. Students will begin to determine the relevance of the information gathered. | 3. Students will write informative texts independently for short timeframes (e.g., a single sitting or a day or two) that organize related information about a topic and convey details from a single source. |

## Standard 7: Multimodal Literacies

Students will comprehend and communicate knowledge through alphabetic, aural, visual, spatial, and/or gestural content.

| Reading<br>Students will comprehend and evaluate multimodal content. | Writing<br>Students will create multimodal content to communicate effectively. |
|---|---|
| **3.7.R** Students will locate and use information from a variety of alphabetic, aural, visual, spatial, and/or gestural content to compare perspectives about ideas and topics. | **3.7.W** Students will communicate their ideas, thoughts, and feelings by combining two or more kinds of content:<br>• writing/alphabetic<br>• sound, visual, and/or spatial<br>• movement |

## Standard 8: Independent Reading and Writing

Students will read and write independently for a variety of purposes and periods of time.

| Reading<br>Students will read self-selected texts independently, choosing genres to suit and expand their personal preferences and purposes. | Writing<br>Students will write independently, intentionally selecting modes, purposes, and audiences. |
|---|---|
| **3.8.R** Students will read selected texts independently and for various lengths of time, choosing genres to suit and expand their personal preferences and purposes. | **3.8.W** Students will write independently using print, cursive, and/or typing for various lengths of time, choosing modes and genres to suit their audience and purpose. |

# Oklahoma Academic Standards
# MATHEMATICS

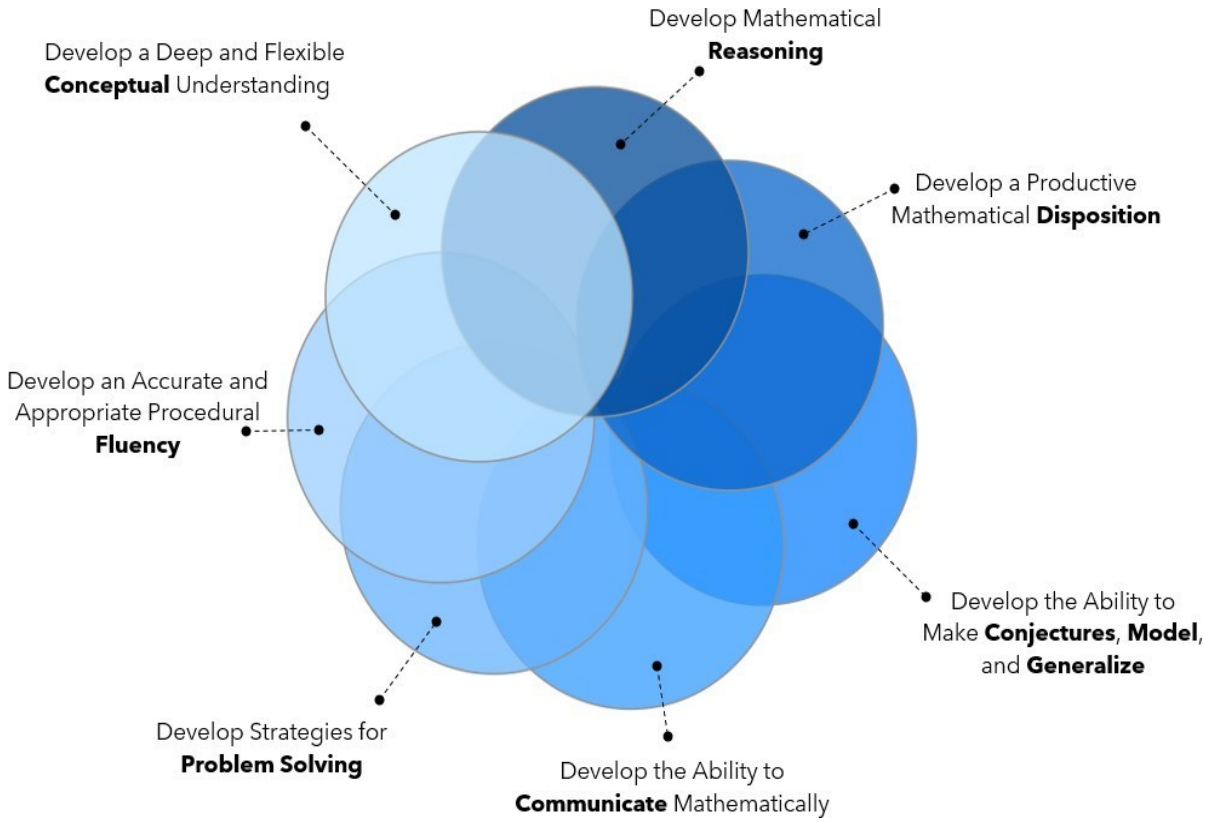
OKLAHOMA Education

## Standards vs. Objectives

The Oklahoma Academic Standards for Mathematics (OAS-M) consist of a set of standards and objectives (see page 9). The objectives serve as “stepping stones” for students to gain proficiency in the corresponding overarching standard. Each objective is the equivalent of at least one mathematical competency that students should know and be able to do if they can demonstrate proficiency in the standard. Objectives can and should be bundled to provide multiple opportunities and methods for students to learn and connect the standards and Mathematical Actions and Processes.

## Mathematical Actions and Processes

The Mathematical Actions and Processes (MAPs) simultaneously reflect the holistic nature of mathematics as a discipline in which patterns and relationships among quantities, numbers, and space are studied and as a form of literacy such that all students are supported in accessing and understanding mathematics for life, for the workplace, for the scientific and technical community, and as a part of cultural heritage. The seven MAPS leverage both the NCTM Process Standards and the Five Mathematical Proficiencies to capture the mathematical experience of Oklahoma students as they pursue mathematical literacy. The gradient blocks at the top of each set of standards reminds educators to engage students in the Mathematical Actions and Processes together with content standards.



## Mathematical Actions and Processes

Throughout their PK-12 education experience, mathematically literate students will:

### Develop a Deep and Flexible Conceptual Understanding

Demonstrate a deep and flexible conceptual understanding of mathematical concepts, operations, and relations while making mathematical and real-world connections. Students will develop an understanding of how and when to apply and use the mathematics they know to solve problems.

### Develop Accurate and Appropriate Procedural Fluency

Focus on the efficiency, flexibility, and accuracy in which students approach and solve problems. Students will learn and develop efficient procedures and algorithms for computations and repeated processes which includes developing fluency in operations with numbers and expressions. Students will have opportunities to justify both informal and commonly used strategies to support their choices of appropriate procedures. As they progress, students will strengthen their understanding and skill through application and practice.

### Develop Strategies for Problem Solving

Analyze the parts of complex mathematical tasks and identify entry points to begin the search for a solution. Students will select from a variety of problem-solving strategies and use corresponding multiple representations (verbal, physical, symbolic, pictorial, graphical, tabular) when appropriate. They will pursue solutions to various tasks from real-world situations and applications that are often interdisciplinary in nature. They will find methods to verify their answers in context and will always question the reasonableness of solutions.

### Develop Mathematical Reasoning

Explore and communicate a variety of reasoning strategies to think through problems. Students will apply their logic to critique the thinking and strategies of others to develop and evaluate mathematical arguments, including making arguments and counterarguments and making connections to other contexts.

### Develop a Productive Mathematical Disposition

Hold the belief that mathematics is sensible, useful, and worthwhile. Students will develop the habit of looking for and making use of patterns and mathematical structures. They will persevere and become resilient, effective problem solvers.

### Develop the Ability to Make Conjectures, Model, and Generalize

Make predictions and conjectures and draw conclusions throughout the problem-solving process based on patterns and the repeated structures in mathematics. Students will create, identify, and extend patterns as a strategy for solving and making sense of problems.

### Develop the Ability to Communicate Mathematically

Students will discuss, write, read, interpret, and translate ideas and concepts mathematically. As they progress, students' ability to communicate mathematically will include their increased use of mathematical language and terms and analysis of mathematical definitions.

# Reading the Oklahoma Academic Standards for Mathematics

## Standards Overview

The Oklahoma Academic Standards for Mathematics are developed around four main content strands: Numbers and Operations, Algebraic Reasoning and Algebra, Geometry and Measurement, and Data and Probability. These four strands organize the content standards throughout PK-7 and Pre-Algebra. The standards for Algebra I, Algebra II, Geometry, Precalculus, and Statistics & Probability are also fundamentally organized around these strands. The Oklahoma Mathematical Actions and Processes (MAPs) are the skills and abilities students should develop and be engaged in throughout their PK-12 mathematics education. Among these are the ability to problem solve, communicate, and reason about mathematics, which will help students be ready for the mathematics expectations of college and the skills desired by many employers. While the MAPs and content standards work together to create clear, concise, and rigorous mathematics standards and expectations for Oklahoma students with the aim of helping them be college and career ready, it is not intended that each Mathematical Action and Process will be utilized or developed with each content standard. For example, content standards that involve explaining a particular concept may be best accomplished by also engaging students in communicating mathematically, whereas standards that focus in the early grades on fluency with operations may align well with the Mathematical Action and Process focused on procedural fluency.

## The Four Content Strands of the Oklahoma Academic Standards for Mathematics

**Numbers and Operations Strand:** A focus on numbers and operations is the cornerstone of a strong mathematics program. Developing students' fluency with numbers and operations throughout their PK-12 mathematics experience requires a balance and connection between conceptual understanding and computational proficiency and efficiency. This strand focuses on the importance of students' understanding of numbers, ways of representing numbers, relationships among numbers, relationships among number systems, and meanings of operations and how they relate to one another. An emphasis is placed on the development of estimation, so students can determine the reasonableness of solutions and answers. Further, it requires that students should be able to compute with proficiency and efficiency.

***The Four Content Strands of the Oklahoma Academic Standards for Mathematics: continued***

**Algebraic Reasoning and Algebra Strand:** All students should be able to reason algebraically and learn algebra. This strand provides focus for the PK-7 and Pre-Algebra standards around the notion that algebra is more than moving symbols around. It is about understanding patterns, relations, and functions, representing and analyzing mathematical situations and structures using algebraic symbols, using mathematical models to represent and understand quantitative relationships, and analyzing change in various contexts. These understandings are critical for success in college-level mathematics and fundamental for many real-world problems and situations students will face in their future careers. High school algebra, precalculus, and trigonometry standards use, apply, and extend these concepts**.**

**Geometry and Measurement Strand:** A focus on geometry should enable students to analyze characteristics of two- and three-dimensional objects, develop arguments based on geometric relationships, describe spatial relationships using coordinate geometry and other representational systems, apply transformations and symmetry to analyze mathematical situations, and utilize visualization, spatial reasoning, and geometric modeling to solve problems. A focus on measurement should enable students to understand measurable attributes of objects and the units, systems, and processes of measurement, and apply appropriate techniques, tools, and formulas to determine measurements. This strand provides focus around the notion that geometry and measurement help students understand and represent ideas and solve problems they will encounter in their daily lives. The high school geometry standards use, apply, and extend these concepts.

**Data and Probability Strand:** An increased emphasis on understanding data should span all grade levels. Making sense of data and probability has become a part of our daily lives, supporting the importance of this strand throughout a student's PK-12 mathematics experience. A focus on data and probability should enable all students to formulate questions that can be addressed with data, and to collect, organize, and display relevant data to answer them. Students should select and use appropriate statistical methods to analyze data, develop and evaluate inferences and predictions that are based on data, and understand and apply basic concepts of probability. High school statistics and probability standards use, apply, and extend these concepts.

# Reading the Oklahoma Academic Standards for Mathematics

**GRADE OR COURSE**

**Oklahoma Academic Standards for Mathematics** 5th Grade (5)

**MATH ACTIONS AND PROCESSES**

| Develop a Deep and Flexible Conceptual Understanding | Develop Accurate and Appropriate Procedural Fluency | Develop Strategies for Problem Solving | Develop Mathematical Reasoning | Develop a Productive Mathematical Disposition | Develop the Ability to Make Conjectures, Model, and Generalize | Develop the Ability to Communicate |
|---|---|---|---|---|---|---|

**Number & Operations (N)**

**STANDARDS**

**STRANDS**

**OBJECTIVES**

| | |
|---|---|
| **5.N. 1** Read, write, represent, and compare fractions and decimals; recognize and write equivalent fractions;convert between fractions and decimals;use fractions and decimals in real-world and mathematical situations. | **5.N.1.1** Represent decimal fractions (e.g., 1/10, 1/100) usin 10 by 10 grids, base-ten blocks, meter stick) and showing the rational number relationship among fractions, decimals and whole numbers. |
| | **5.N.1.2** Read, write, and represent decimals using place value to describe decimal numbers including fractional numbers as small as thousandths and whole numbers up to seven digits. |
| | **5.N.1.3** Compare and order fractions and decimals, including mixed numbers and fractions less than one, and locate on a number line. |
| | **5.N.1.4** Recognize and generate equivalent decimals, fractions, mixed numbers, and fractions in various mathematical models. |
| **5.N.2** Divide multi-digit numbers and solve real-world and mathematical problems using arithmetic. | **5.N.2.1** Divide multi-digit numbers using various mathematical models. |
| | **5.N.2.2** Divide multi-digit numbers, by one- and two-digit divisors, based on knowledge of place value, including but not limited to standard algorithms. |
| | **5.N.2.3** Recognize that remainders can be represented in a variety of ways, including a whole number, fraction, or decimal. Determine the most meaningful form of a remainder based on the context of the problem. |
| | **5.N.2.4** Construct mathematical models to solve multi-digit whole numbers problems requiring addition, subtraction, multiplication, and division using various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results. |
| **5.N.3** Add and subtract fractions with like and unlike denominators, mixed numbers and decimals to solve real-world and mathematical problems. | **5.N.3.1** Estimate sums and differences of fractions with like and unlike denominators, mixed numbers, and decimals to assess the reasonableness of the results. |
| | **5.N.3.2** Illustrate addition and subtraction of fractions with like and unlike denominators, mixed numbers, and decimals using a variety of mathematical models (e.g., fraction strips, area models, number lines, fraction rods). |
| | **5.N.3.3** Add and subtract fractions with like and unlike denominators, mixed numbers, and decimals, involving money, measurement, geometry, and data using various mathematical models including but not limited to standard algorithms. |
| | **5.N.3.4** Applying mental math and knowledge of place value (no computations), find 0.1 more than a number and 0.1 less than a number; find 0.01 more than a number and 0.01 less than a number; find 0.001 more than a number and 0.001 less than a number -- through the thousandths place. |

| Develop a Deep and Flexible Conceptual Understanding | Develop Accurate and Appropriate Procedural Fluency | Develop Strategies for Problem Solving | Develop Mathematical Reasoning | Develop a Productive Mathematical Disposition | Develop the Ability to Make Conjectures, Model, and Generalize | Develop the Ability to Communicate |
|---|---|---|---|---|---|---|

## Numbers & Operations (N)

| | |
|---|---|
| **3.N.1** Compare and represent whole numbers up to 100,000 with an emphasis on place value and equality. | **3.N.1.1** Read, write, discuss, and represent whole numbers up to 100,000. Representations should include but are not limited to numerals, words, pictures, number lines, and manipulatives (e.g., 350 = 3 hundreds, 5 tens = 35 tens = 3 hundreds, 4 tens, 10 ones). |
| | **3.N.1.2** Use place value to describe whole numbers between 1,000 and 100,000 in terms of ten thousands, thousands, hundreds, tens and ones, including written, standard, and expanded forms. |
| | **3.N.1.3** Applying knowledge of place values, use mental strategies (no written computations) to find 100 more or 100 less than a given number, 1,000 more or 1,000 less than a given number, and 10,000 more or 10,000 less than a given number, up to a five-digit number. |
| | **3.N.1.4** Use place value to compare and order whole numbers, up to 100,000, using comparative language, numbers, and symbols. |
| | **3.N.1.5** Use place value understanding to round numbers to the nearest thousand, ten-thousand and hundred thousand. |
| **3.N.2** Solve real-world and mathematical problems using addition, subtraction, multiplication, and division. | **3.N.2.1** Represent multiplication facts by modeling a variety of approaches (e.g., manipulatives, repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line, skip counting). |
| | **3.N.2.2** Demonstrate fluency with multiplication facts using factors up to 10. |
| | **3.N.2.3** Use strategies and algorithms based on knowledge of place value and equality to fluently add and subtract up to five-digit numbers (answer not to exceed 100,000). |
| | **3.N.2.4** Recognize when to round numbers and apply understanding to estimate sums and differences to the nearest ten thousand, thousand, hundred, and ten. |
| | **3.N.2.5** Use addition and subtraction to solve problems involving whole numbers. Use various strategies, including the relationship between addition and subtraction and the context of the problem to assess the reasonableness of results. |
| | **3.N.2.6** Represent division facts and divisibility by modeling a variety of approaches (e.g., repeated subtraction, equal sharing, forming equal groups) to show the relationship between multiplication and division. |
| | **3.N.2.7** Apply the relationship between multiplication and division to represent and solve problems. |
| | **3.N.2.8** Use various strategies (e.g., base ten blocks, area models, arrays, repeated addition, algorithms) based on knowledge of place value, equality, and properties of addition and multiplication to multiply a two-digit factor by a one-digit factor. |

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| **3.N.3** Use and justify fractional representations in real-world and mathematical problems. | **3.N.3.1** Read and write fractions with words and symbols using appropriate terminology (i.e., numerator and denominator). |
| | **3.N.3.2** Model fractions using length, set, and area for halves, thirds, fourths, sixths, and eighths. |
| | **3.N.3.3** Apply understanding of unit fractions and use this understanding to compose and decompose fractions related to the same whole. |
| | **3.N.3.4** Use models and number lines to order and compare fractions that are related to the same whole. |
| **3.N.4** Determine the value of a set of coins and determine the value of a set of bills in monetary transactions. | **3.N.4.1** Use addition and subtraction to determine the value of a collection of coins up to one dollar using the cent symbol and in monetary transactions. |
| | **3.N.4.2** Add and subtract a collection of bills up to twenty dollars using whole dollars in monetary transactions. |
| **Algebraic Reasoning & Algebra (A)** | |
| **3.A.1** Describe and create representations of numerical and geometric patterns. | **3.A.1.1** Create, describe, and extend patterns involving addition, subtraction, or multiplication to solve problems in a variety of contexts. |
| | **3.A.1.2** Describe the rule (limited to a single operation) for a pattern from an input/output table or function machine involving addition, subtraction, or multiplication. |
| | **3.A.1.3** Explore and develop visual representations of increasing and decreasing geometric patterns and construct the next steps. |
| **3.A.2** Use number sentences involving multiplication and unknowns to represent and solve real-world and mathematical problems. | **3.A.2.1** Use number sense with the properties of addition, subtraction, and multiplication, to find unknowns (represented by symbols) in one-step equations. Generate real-world situations to represent number sentences. |
| | **3.A.2.2** Identify, represent, and apply the number properties (commutative, identity, and associative properties of addition and multiplication) using models and manipulatives to solve problems. |
| **Geometry & Measurement (GM)** | |
| **3.GM.1** Analyze and use geometric attributes to describe and create polygons and three-dimensional figures in various contexts. | **3.GM 1.1** Sort three-dimensional shapes based on attributes. |
| | **3.GM.1.2** Build a three-dimensional figure using unit cubes when shown a picture of a three-dimensional shape. |
| | **3.GM.1.3** Classify angles within a polygon as acute, right, obtuse, and straight. |
| **3.GM.2** Understand measurable attributes of real-world and mathematical objects using various tools. | **3.GM.2.1** Find the perimeter of a polygon, given whole number lengths of the sides, using a variety of models. |
| | **3.GM.2.2** Analyze why length and width are multiplied to find the area of a rectangle by decomposing the rectangle into one unit by one unit squares and viewing these as rows and columns to determine the area. |
| | **3.GM.2.3** Count cubes systematically to identify the number of cubes needed to pack the whole or half of a three-dimensional structure. |
| | **3.GM.2.4** Find the area of two-dimensional figures by counting the total number of same-size unit squares that fill the shape without gaps or overlaps. |

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| **3.GM.2** ***continued*** Understand measurable attributes of real-world and mathematical objects using various tools. | **3.GM.2.5** Choose an appropriate measurement instrument and measure the length of objects to the nearest whole centimeter or whole meter. |
| | **3.GM.2.6** Choose an appropriate measurement instrument and measure the length of objects to the nearest whole yard, whole foot, or half inch. |
| | **3.GM.2.7** Use an analog thermometer to determine temperature to the nearest degree in Fahrenheit and Celsius. |
| **3.GM.3** Solve problems by telling time to the nearest five-minute interval. | **3.GM.3.1** Read and write time to the nearest five-minute interval (analog and digital). |
| | **3.GM.3.2** Determine the solutions to problems involving addition and subtraction of time in intervals of five minutes, up to one hour, using pictorial models, number line diagrams, or other tools. |
| **Data & Probability (D)** | |
| **3.D.1** Collect, organize, and analyze data. | **3.D.1.1** Collect and organize a data set with multiple categories using a frequency table, line plot, pictograph, or bar graph with scaled intervals. |
| | **3.D.1.2** Solve one- and two-step problems using categorical data represented with a frequency table, pictograph, or bar graph with scaled intervals. |

# OKLAHOMA ACADEMIC STANDARDS

# SCIENCE

OKLAHOMA STATE DEPARTMENT OF
EDUCATION
CHAMPION EXCELLENCE

# Science Strands Overview

The Draft Oklahoma Academic Standards for Science, K-12 are three-dimensional performance expectations representing the things students should know, understand, and be able to do to be proficient in science and engineering. Performance expectations are considered standards and include a science and engineering practice (everyday skills of scientists and engineers), disciplinary core ideas (science ideas used by scientists and engineers), and crosscutting concepts (ways of thinking like scientists and engineers). The PreK standards emphasize one dimension; the science and engineering practices. This provides early learners with ample time for exploratory play and background experiences that will inform learning experiences K-12.

**Performance Expectation:**
Each Performance Expectation is built upon recommendations in *A Framework for K-12 Science Education* and the three dimensions of science.

1. Science and Engineering Practices
2. Disciplinary Core Ideas
3. Crosscutting Concepts (NRC, 2012, p. 2)

The following additional components in the standard documents serve as support for instructors in providing clarity and further guidance for each Performance Expectation.

**Clarification Statement:**
Where needed, a Clarification Statement accompanies a Performance Expectation. The aim of a Clarification Statement is to provide further explanation or examples to better support educators in understanding the aim of the Performance Expectation.

**Assessment Boundary:**
Where applicable, an Assessment Boundary accompanies a Performance Expectation in order to provide additional support for educators in understanding the intent of the Performance Expectation and its relation to other Performance Expectations in the learning progression. Teachers should utilize the Assessment Boundaries as tools for developing curriculum and local assessments. For 5th grade, 8th grade, Biology, and Physical Science(s) the Assessement Boundaries will be utilized to inform the development of the state summative academic achievement assessments.

# Dimension 1: Science and Engineering Practices

The Science and Engineering Practices describe the major practices that scientists employ as they investigate and build models and theories about the world, and a key set of engineering practices that engineers use as they design and build systems. Performance Expectations that emphasize engineering are designated with an asterik *. The eight science and engineering practices are:

**Asking Questions and Defining Problems**
A practice of science is to ask and refine questions that lead to descriptions and explanations of how the natural and designed world(s) works. Engineering questions clarify problems to determine criteria for successful solutions.

**Developing and Using Models**
A practice of both science and engineering is to use and construct models as helpful tools for representing ideas and explanations. These tools include diagrams, drawings, physical replicas, mathematical representations, analogies, and computer simulations.

**Planning and Carrying Out Investigations**
Scientists and engineers plan and carry out investigations in the field or laboratory, working collaboratively as well as individually. Their investigations are systematic and require clarifying what counts as data and identifying variables or parameters.

**Analyzing and Interpreting Data**
Scientific investigations produce data that must be analyzed in order to derive meaning, and engineering investigations include analysis of data collected in the tests of designs.

**Using Mathematics and Computational Thinking**
In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for constructing simulations, solving equations exactly or approximately, and recognizing, expressing, and applying quantitative relationships.

**Constructing Explanations and Designing Solutions**
End products of science are explanations, and end products of engineering are solutions. The construction of theories provides explanatory accounts of the world, and scientific knowledge is utilized in the development of solution to problems.

**Engaging Scientific Argument from Evidence**
Argumentation is the process by which evidence-based conclusions and solutions are reached. In science and engineering, reasoning and argument based on evidence are essential to identifying the best explanation for a natural phenomenon or the best solution to a design problem.

**Obtaining, Evaluating, and Communicating Information**
Scientists and engineers must be able to communicate clearly and persuasively the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity.

# Dimension 2: Disciplinary Core Ideas

Disciplinary Core Ideas represent a set of science and engineering ideas for K-12 science education that have broad importance across multiple sciences or engineering disciplines; provide a key tool for understanding or investigating more complex ideas and solving problems; relate to the interests and life experiences of students; and are teachable and learnable over multiple grades at increasing levels of sophistication. (NRC, 2012, p. 31) Disciplinary Core Ideas are grouped into four domains:

**Domain 1: Physical Science (PS)**
Most systems or processes depend at some level on physical and chemical subprocesses, whether the system is a star, Earth's atmosphere, a river, a bicycle, or a living cell. To understand the physical and chemical basis of a system, students must understand the structure of matter, the forces between objects, the related energy transfers, and their consequences. In this way, the underlying principles of physical science, chemistry, and physics allow students to understand all natural and human-created phenomena.

**Domain 2: Life Science (LS)**
The life sciences focus on patterns, processes, and relationships of living organisms. The study of life ranges over scales from single molecules, organisms and ecosystems, to the entire biosphere. A core principle of the life sciences is that organisms are related through common ancestry and that processes of natural selection have led to the tremendous diversity of the biosphere. Through courses like Biology and Environmental Science, students explore all aspects of living things and the environments they live in.

**Domain 3: Earth and Space Science (ESS)**
Through Earth and Space Sciences (ESS), students investigate processes that operate on Earth and also address Earth's place in the solar system and the galaxy. ESS involve phenomena that range in scale from unimaginably large to invisibly small and provide students opportunities to understand how the atmosphere, geosphere, and biosphere are connected.

**Domain 4: Engineering, Technology, and Applications of Science (ETS)**
The applications of science knowledge and practices to engineering have contributed to the technologies and the systems that serve people today. Insights gained from scientific discovery have altered the ways in which buildings, bridges, and cities are constructed; changed the operations of factories; led to new methods of generating and distributing energy; and created new modes of travel and communication. An overarching goal of ETS is for students to explore links among engineering, technology, science, and society throughout the physical, life, and Earth and space sciences.

# Dimension 3: Crosscutting Concepts

The Crosscutting Concepts represent common threads or themes that span across science disciplines (biology, chemistry, physics, environmental science, Earth/space science) and have value to both scientists and engineers because they identify universal properties and processes found in all disciplines. These Crosscutting Concepts are:

**Patterns**
Observed patterns of forms and events guide organization and classification. Patterns prompt questions about the factors that influence cause and effect relationships. Patterns are useful as evidence to support explanations and arguments.

**Cause and Effect**
Events have causes, sometimes simple, sometimes multifaceted and complex. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.

**Scale, Proportion, Quantity**
In considering phenomena, it is critical to recognize what is relevant at different measures of size, time, and energy and to recognize how changes in scale, proportion, or quantity affect a system's structure or performance.

**Systems and System Models**
Defining the system under study—specifying its boundaries and making explicit a model of that system—provides tools for understanding and testing ideas that are applicable throughout science and engineering.

**Energy and Matter**
Tracking fluxes of energy and matter into, out of, and within systems helps one understand the system's possibilities and limitations.

**Structure and Function**
An object's structure and shape determine many of its properties and functions. The structures, shapes, and substructures of living organisms determine how the organism functions to meet its needs within an environment.

**Stability and Change**
For natural and built systems alike, conditions of stability and rates of change provide the focus for understanding how the system operates and causes for changes in syste

# Reading the Oklahoma Academic Standards for Science

**Oklahoma Academic Standards for Science** Kindergarten — Grade or Course

**KINDERGARTEN (K)**

**Motion and Stability of Forces (PS2)** — Disciplinary Core Idea Category

**K.PS2.1 Plan and conduct an inves[illegible] to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.** — Performance Expectation

**Clarification Statement:** Example investigations include observing the movement of different objects being pulled by a string, observing different objects pushed on a surface and u[illegible] down a ramp, or observing how two objects (e.g., toy cars, balls) interact when they collide. Observations should be collected directly [illegible] share ideas for investigations and observations. **Assessment Boundary:** Asse[illegible] is limited to different relative strengths or different directions, but not both at the same time. Assessment does not include non-contact pushes or pulls such as those produced by magnets. — Clarification Statement & Assessment Boundary

| Science and Engineering Practice | Disciplinary Core Ideas | Crosscutting Concepts |
|---|---|---|
| **Planning and Carrying Out Inve[illegible]tions:**<br>• [illegible] plan and [illegible] an investigation in collaboration with peers. | • Pushes and pulls can have different strengths and directions.<br>• Pushing or pulli[illegible] an object can change the speed or direction of [illegible] motion and [illegible] to stop it.<br>• A bigger push [illegible] makes things speed up or slow down more quickly.<br>• When objects touch or collide, they push on one another and can change motion. | **Cause and Effect:**<br>Simple tests can be designed to gather evidence to support or refute student ideas about causes. |

Science and Engineering Practice — Disciplinary Core Ideas — Crosscutting Concept

## 3RD GRADE (3)

### Motion and Stability: Forces and Interactions (PS2)

**3.PS2.1 Plan and conduct investigations on the effects of balanced and unbalanced forces on the motion of an object.**

**Clarification Statement:** Examples could include that an unbalanced force on one side of a ball can make it start moving and balanced forces pushing on a box from opposite sides will not produce any motion at all. **Assessment Boundary:** Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment does not include quantitative force size, only qualitative and relative. Assessment is limited to gravity being addressed as a force that pulls objects down.

| Science and Engineering Practice | Disciplinary Core Ideas | Crosscutting Concepts |
|---|---|---|
| **Planning and Carrying Out Investigations:**<br>• Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. | • Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion. (Boundary: Qualitative and conceptual, but quantitative addition of forces is not used at this level.)<br>• Objects in contact exert forces on each other. | **Cause and Effect:**<br>• Cause and effect relationships are routinely identified. |

**3.PS2.2 Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.**

**Clarification Statement:** Examples of motion with a predictable pattern could include a child swinging in a swing (pendulum), object rolling down a ramp from different heights, a ball rolling back and forth in a bowl, and two children on a see-saw. **Assessment Boundary:** Assessment does not include technical terms such as period and frequency.

| Science and Engineering Practice | Disciplinary Core Ideas | Crosscutting Concepts |
|---|---|---|
| **Planning and Carrying Out Investigations:**<br>• Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon. | • The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed). | **Patterns:**<br>• Patterns of change can be used to make predictions. |

## Motion and Stability: Forces and Interactions (PS2)

**3.PS2.3 Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.**

**Clarification Statement:** Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force. **Assessment Boundary:** Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity.

| Science and Engineering Practice | Disciplinary Core Ideas | Crosscutting Concepts |
|---|---|---|
| **Asking Questions:**<br>• Ask questions that can be investigated based on patterns such as cause and effect relationships. | • Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other. | **Cause and Effect:**<br>• Cause and effect relationships are routinely identified, tested, and used to explain change. |

**3.PS2.4 Define a simple design problem that can be solved by applying scientific ideas about magnets.***

**Clarification Statement:** Examples of problems could include a door that will not stay closed or two objects that keep colliding. **Assessment Boundary:** N/A

| Science and Engineering Practice | Disciplinary Core Ideas | Crosscutting Concepts |
|---|---|---|
| **Define Problems:**<br>• Define a simple problem that can be solved through the development of a new or improved object or tool. | • Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.<br>• Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process. | **Cause and Effect:**<br>• Cause and effect relationships are routinely identified, tested, and used to explain change. *Other crosscutting concepts may be more appropriate depending on the problem chosen.* |

| From Molecules to Organisms: Structure and Function (LS1) | | |
|---|---|---|
| **3.LS1.1 Develop and use models to describe that organisms have unique and diverse life cycles but all have a common pattern of birth, growth, reproduction, and death.** | | |
| **Clarification Statement:** Changes different organisms go through during their life form a pattern. Organism life cycles that can be studied include mealworms, dandelions, lima beans, dogs, and butterflies. **Assessment Boundary:** Assessment includes animal and plant life cycles. Plant life cycles are limited to those of flowering plants. Assessment does not include details of human reproduction or microscopic organisms. | | |
| **Science and Engineering Practice** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Developing and Using Models:**<br>• Develop models to describe phenomena. | • Reproduction is essential to the continued existence of every kind of organism.<br>• Plants and animals have unique and diverse life cycles. | **Patterns:**<br>• Patterns of change can be used to make predictions. |

| Ecosystems: Interactions, Energy, and Dynamics (LS2) | | |
|---|---|---|
| **3.LS2.1 Construct an argument that some animals form groups that help members survive.** | | |
| **Clarification Statement:** Arguments could include examples of group behavior such as division of labor in a bee colony, flocks of birds staying together to confuse or intimidate predators, or wolves hunting in packs to more efficiently catch and kill prey. When animals are no longer part of their group, they may not survive as well. **Assessment Boundary:** N/A | | |
| **Science and Engineering Practice** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Engage in Argument from Evidence:**<br>• Construct an argument from evidence, data, and/or a model. | • Being part of a group helps animals obtain food, defend themselves, and cope with changes.<br>• Groups may serve different functions and vary dramatically in size. | **Cause and Effect:**<br>• Cause and effect relationships are routinely used to explain change. |

## Heredity: Inheritance and Variation of Traits (LS3)

**3.LS3.1 Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.**

**Clarification Statement:** Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans. **Assessment Boundary:** Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.

| Science and Engineering Practice | Disciplinary Core Ideas | Crosscutting Concepts |
|---|---|---|
| **Analyzing and Interpreting Data:**<br>• Analyze and interpret data to make sense of phenomena using logical reasoning. | • Many characteristics of organisms are inherited from their parents.<br>• Different organisms vary in how they look and function because they have different inherited information. | **Patterns:**<br>• Similarities and differences in patterns can be used to sort and classify natural phenomenon. |

**3.LS3.2 Use evidence to support the explanation that traits can be influenced by the environment.**

**Clarification Statement:** Examples of the environment affecting a trait could include that normally tall plants grown with insufficient water are stunted; a pet dog that is given too much food and little exercise may become overweight; and animals who teach their offspring skills like hunting. **Assessment Boundary:** N/A

| Science and Engineering Practice | Disciplinary Core Ideas | Crosscutting Concepts |
|---|---|---|
| **Constructing Explanations:**<br>• Use evidence (e.g., observations, patterns) to support an explanation. | • Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.<br>• The environment also affects the traits that an organism develops. | **Cause and Effect:**<br>• Cause and effect relationships are routinely identified and used to explain changes. |

## Biological Unity and Diversity (LS4)

**3.LS4.1 Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.**

**Clarification Statement:** Examples of data could include type, size, and distribution of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms. **Assessment Boundary:** Assessment does not include identification of specific fossils or present plants and animals. Assessment is limited to major fossil types and relative ages.

| Science and Engineering Practice | Disciplinary Core Ideas | Crosscutting Concepts |
|---|---|---|
| **Analyzing and Interpreting Data:**<br>• Analyze and interpret data to make sense of phenomena using logical reasoning. | • Some kinds of plants and animals that once lived on Earth are no longer found anywhere.<br>• Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. | **Scale, Proportion, and Quantity:**<br>• Observable phenomena exist from very short to very long time periods. |

**3.LS4.2 Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving and reproducing.**

**Clarification Statement:** Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring. **Assessment Boundary:** N/A

| Science and Engineering Practice | Disciplinary Core Ideas | Crosscutting Concepts |
|---|---|---|
| **Constructing Explanations:**<br>• Use evidence (e.g., observations, patterns) to construct an explanation. | • Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. | **Cause and Effect:**<br>• Cause and effect relationships are routinely identified, tested, or used to explain change. |

## Biological Unity and Diversity (LS4)

**3.LS4.3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.**

**Clarification Statement:** Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other. At no time should animals be put in danger to collect evidence.
**Assessment Boundary:** N/A

| Science and Engineering Practice | Disciplinary Core Ideas | Crosscutting Concepts |
|---|---|---|
| **Engaging in Argument from Evidence:**<br>• Construct an argument with evidence. | • For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.<br>• Changes in an organism's habitat are sometimes beneficial to it and sometimes harmful. | **Cause and Effect:**<br>• Cause and effect relationships are routinely identified and used to explain change. |

**3.LS4.4 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.***

**Clarification Statement:** Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms. **Assessment Boundary:** Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.

| Science and Engineering Practice | Disciplinary Core Ideas | Crosscutting Concepts |
|---|---|---|
| **Engaging in Argument from Evidence:**<br>• Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. | • When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die.<br>• Populations live in a variety of habitats, and change in those habitats affects the organisms living there. | **Systems and System Models:**<br>• A system can be described in terms of its components and their interactions. |

| Earth's Systems (ESS2) | | |
|---|---|---|
| **3.ESS2.1 Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.** | | |
| **Clarification Statement:** Examples of data at this grade level could include average temperature, precipitation, and wind direction. **Assessment Boundary:** Assessment of graphical displays is limited to frequency tables, line plots, pictographs, and single bar graphs. Students are not expected to calculate averages but simply to represent them in graphical form. | | |
| **Science and Engineering Practice** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Analyzing and Interpreting Data:**<br>• Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships. | • Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. | **Patterns:**<br>• Patterns of change can be used to make predictions. |

| Earth's Systems (ESS2) | | |
|---|---|---|
| **3.ESS2.2 Obtain and combine information to describe climates in different regions of the world.** | | |
| **Clarification Statement:** Information could include hours of daylight, amount of precipitation, temperature, seasons, and wind. Descriptions could include the use of frequency tables, line plots, pictographs, and single bar graphs. Climate data should include weather conditions over multiple years. **Assessment Boundary:** Assessments do not include causes of seasons. | | |
| **Science and Engineering Practice** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Obtaining, Evaluating, and Communicating Information:**<br>• Obtain and combine information from books and other reliable media to explain phenomena. | • Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years to centuries. | **Patterns:**<br>• Patterns of change can be used to make predictions. |

| Earth and Human Activity (ESS3) | | |
|---|---|---|
| **3.ESS3.1 Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.*** | | |
| **Clarification Statement:** Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind/hail resistant roofs/windows, textured walking surfaces for ice, tornado shelters, and lighting rods. While earthquakes, volcanoes, and tsunamis are natural hazards they are not caused by weather phenomenon. **Assessment Boundary:** Assessments are limited to weather-related hazards only. | | |
| **Science and Engineering Practice** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Engaging in Argument from Evidence:**<br>• Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. | • A variety of natural hazards result from natural processes.<br>• Humans cannot eliminate natural hazards but can take steps to reduce their impact.<br>• Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones). | **Cause and Effect:**<br>• Cause and effect relationships are routinely identified, tested, and used to explain change. |

# OKLAHOMA ACADEMIC STANDARDS

# SOCIAL STUDIES

OKLAHOMA STATE DEPARTMENT OF EDUCATION

CHAMPION EXCELLENCE

# Social Studies Content Strands Overview

Social Studies is a systematic and coordinated discipline designed to promote civic competence by drawing upon four content strands: history, geography, civics, and economics. These strands draw from all fields of study related to the social sciences to provide a framework used in the development of the content standards for social studies. They are to be threaded through an integrated program, from grades pre-K through 12, as appropriate at each level. While at some grades and for some courses, specific strands will be more dominant than others, all strands are represented and interrelated in the standards for each grade and course.

**Strand 1: History**
History focuses on the written record of human experience revealing how individuals and societies developed institutions, philosophies, ideals, and cultural values, and resolved their problems. A balanced study of history helps students understand the how and why of the challenges and successes of past societies. By studying the choices and decisions of the past, students can confront today's problems with a deeper awareness of their alternatives and likely consequences.

**Strand 2: Geography**
Geography has more to do with asking questions and solving problems than with rote memorization of isolated facts. It is the study of the earth's surface and the processes that shape it, the relationships between people and environments, and the connections between people and places. As a discipline, geography provides the skills to help students answer questions about where things are, how they got there, and how they interact with other things - in the past, now, and in the future.

**Strand 3: Civics**
Civics is defined to mean the study of the rights and duties of Oklahoma and United States citizens and of how their governments work. This strand helps students understand the essential principles and workings of their political system and that of others, as well as the relationship of American politics and government to world affairs. The goal of civics is to develop literate, informed, competent, and responsible citizens who are politically aware, active, and committed to the fundamental values and principles of American constitutional democracy.

**Strand 4: Economics**
Economics provides students with an understanding of how individuals, communities, states, and nations allocate both scarce and abundant resources. A clear understanding of economics enables students to comprehend the various competing economic philosophies, ideas, and forces that affect them every day, measure the effectiveness of each, and identify and evaluate the consequences of personal decisions and public policies. Students then will understand how a market economy effectively functions preparing them to be producers, consumers, and citizens.

# Social Studies Practices Overview

The Social Studies Practices reflect the key skills and disciplinary tools to prepare students for college, career, and civic life. The practices are meant to be integrated with the instruction of content standards. The five practices are defined broadly below and are further delineated on pg. 6. The social studies practices are designed to support student mastery of the content through a progression of skills PK-12.

### Engage in Democratic Processes

Understanding civic virtues and the role of civic institutions. Students will gain knowledge of the history, principles, and foundations of American democracy to participate in civic and democratic processes. Students will identify the institutions of American government to analyze their role as responsible citizens.

### Analyze and Address Authentic Civic Issues

Understanding the importance of critical questioning to solve real world problems. Students will develop essential questions to frame independent inquiry related to the past and present. Students will identify and address public problems individually and collaboratively to improve communities and society.

### Acquire, Apply, and Evaluate Evidence

Understanding and using strategies to analyze evidence in the social studies. Students will evaluate historical, geographic, and economic information. Students will draw conclusions from primary and secondary sources to formulate informed decisions.

### Read Critically and Interpret Information Sources

Understanding the purpose of engaging with text.
Students will evaluate factual information and points of view as presented in text. Students will read historical and contemporary texts to engage in collaborative discussion.

### Engage in Evidence-Based Writing

Understanding the multiple purposes of the writing process.
Students will develop written products designed for a variety of social studies related investigations. Students will use and integrate evidence to present knowledge and support opinion.

# Social Studies Practices PK-12

The Social Studies Practices describe the experience all students should have as they explore and reason about social studies content PK-12. Additional guidance for what the Social Studies Practices look like across grade levels is provided in **Appendix A: Social Studies Practices PK-12 Progression**.

1. **Engage in Democratic Processes** - Students will understand the principles of government, the benefits of democratic systems, and their responsibilities as citizens.
   - 1.A. Students will demonstrate an understanding of the virtues that citizens should use when interacting with each other and the virtues that guide official government institutions.
   - 1.B. Students will demonstrate an understanding of the important institutions of their society and the principles that these institutions are intended to reflect.
   - 1.C. Students will demonstrate understanding of the processes and rules by which groups of people make decisions, govern themselves, and address public problems.
2. **Analyze and Address Authentic Civic Issues** - Students will determine the kinds of sources that will be helpful in answering essential, compelling, and supporting questions addressing authentic civic issues.
   - 2.A. Students will demonstrate the capability for developing essential, compelling, and supporting questions that address authentic civic issues.
   - 2.B. Students will demonstrate the ability to investigate problems taking into consideration multiple points of view represented in arguments, structure of an explanation, and other sources.
3. **Acquire, Apply, and Evaluate Evidence** - Students will utilize interdisciplinary tools and master the basic concepts of the social studies in order to acquire and apply content understanding in all related fields of study.
   - 3.A. Students will develop skills and practices which demonstrate an understanding that historical inquiry is based on the analysis and evaluation of evidence and its credibility.
   - 3.B. Students will demonstrate an understanding of geographic concepts and develop mastery of geographic tools and ways of thinking in order to become geographically informed.
   - 3.C. Students will analyze the principles of economic systems and develop an understanding of the benefits of a market system in local, national, and global settings.
4. **Read Critically and Interpret Informational Sources** - Students will engage in critical, active reading of grade-level appropriate primary and secondary sources related to key social studies concepts, including frequent analysis and interpretation of informational sources.
   - 4.A. Students will comprehend, evaluate, and synthesize textual sources to acquire and refine knowledge in the social studies.
   - 4.B. Students will apply critical reading and thinking skills to interpret, evaluate, and respond to a variety of complex texts from historical, ethnic, and global perspectives.
5. **Engage in Evidence-Based Writing** - Students will apply effective communication skills by developing a variety of evidence-based written products designed for multiple purposes and tasks, in order to demonstrate their understandings of social studies concepts, ideas, and content.
   - 5.A. Students will summarize and paraphrase, integrate evidence, and cite sources to create written products, research projects, and presentations for multiple purposes related to social studies content.
   - 5.B. Students will engage in authentic inquiry to acquire, refine, and share knowledge through written presentations related to social studies.

# Reading the Oklahoma Academic Standards for Social Studies

Practices

Oklahoma Academic Standards for Social Studies 2nd Grade (2)

Grade or Course

| Engage in Democratic Processes | Analyze and Address Authentic Civic Issues | Acquire, Apply, and Evaluate Evidence | Read Critically and Interpret Informational Sources | Engage in Evidence-Based Writing |
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**2nd Grade Content Standards**

| Standards | Objectives |
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| **2.1** The student will explain the importance of the basic principles that provide the foundation of the American system of government. | **2.1.1** Describe the Constitution of the United States as the structure for our national government. |
| | **2.1.2** Summarize the five key individual rights and liberties protected by the First Amendment to the Constitution of the United States. |
| | **2.1.3** Explain how active citizens participate in the government by voting to elect officials that represent them. |
| | **2.1.4** Identify the basic roles of national leaders including the President of the United States , the members of the United States Congress, and the justices of the Supreme Court. |
| | **2.1.5** Explain how all people can play an important role in their community. |
| **2.2** The student will describe the physical and human characteristics of their environment. | **2.2.1** Construct basic maps using cardinal directions and map symbols. |
| | **2.2.2** Describe absolute and relative location using latitude, longitude, and hemispheres on basic maps and globes. |
| | **2.2.3** Use political maps to locate the state of Oklahoma and the six bordering states. |
| | **2.2.4** Identify and locate basic landforms, bodies of water, continents, and oceans on a map. |
| | **2.2.5** Describe how communities modify the environment to meet their needs. |
| | **2.2.6** Describe customs, traditions, clothing, food, housing, and music as basic elements of various cultures represented within the local community. |

| Engage in Democratic Processes | Analyze and Address Authentic Civic Issues | Acquire, Apply, and Evaluate Evidence | Read Critically and Interpret Informational Sources | Engage in Evidence-Based Writing |
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| 3rd Grade Content Standards | |
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| **3.1** The student will analyze the traits of good citizens. | **3.1.1** Examine and determine the main purposes of Oklahoma's state government and identify elected leaders of the state of Oklahoma and the three branches of government. |
| | **3.1.2** Explain that tribal governments in Oklahoma have a right to self-government known as sovereignty. |
| | **3.1.3** Describe the historical significance of the symbols of Oklahoma including the Oklahoma State Seal and the Oklahoma Flag; explain how the name of Oklahoma is derived from the Choctaw language. |
| | **3.1.4** Describe relationships between people and events of the past, including those commemorated on national, state, and community holidays. |
| | **3.1.5** Define the concept of civic virtue and responsibilities of the citizen at the local, state, and tribal levels, including respect for diversity. |
| **3.2** The student will examine Oklahoma's geography and how people of Oklahoma interact with their environment. | 1. Examine Oklahoma's political and physical features.<br>A.Identify the state of Oklahoma using relative location, absolute location (latitude and longitude), direction, scale, size, and shape using physical and political maps.<br>B. Interpret thematic maps of Oklahoma with the essential map elements of title, legend, scale, and directional indicators.<br>C. Identify Oklahoma's major landforms and bodies of water on a physical map.<br>D. Identify Oklahoma's major metropolitan centers and cities on a political map.<br>E. Describe the climate and various natural vegetation zones found in Oklahoma.<br>F. Identify the six states bordering Oklahoma on a map. |

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| | **3.2.2** Examine the interaction of the environment and the peoples of Oklahoma.<br>A.Describe how early American Indians used Oklahoma's natural resources, such as bison hunting, fur trading, and farming.<br>B.Describe how pioneers to Oklahoma adapted to and modified their environment, such as sod houses, windmills, and crops.<br>C.Summarize how the weather and the environment have impacted the economy of Oklahoma in events such as the Dust Bowl, floods, and tornadoes.<br>D.Summarize how Oklahomans affect and change their environments such as the construction of the McClellan-Kerr Arkansas River Navigation System, creation of recreational lakes by the building of dams, irrigation of croplands, and the establishment of wildlife refuges. |
| | **3.2.3** Identify the characteristics of renewable and non-renewable resources and evaluate the role of citizens in conserving natural resources. |
| **3.3** The student will analyze the significant events and historic personalities contributing to the development of the state of Oklahoma. | **3.3.1** Understand and describe the relationship between historic events and chronology through the creation of basic timelines. |
| | **3.3.2** Read and interpret primary sources related to key events in Oklahoma's past. |
| | **3.3.3** Describe American Indian pre-contact cultures that have inhabited what is now Oklahoma, such as the Spiro Mound Builders. |
| | **3.3.4** Identify cultural similarities and differences of the existing sovereign tribal nations in Oklahoma, especially those near the local community. |
| | **3.3.5** Describe early expeditions into Oklahoma such as those of Coronado, Washington Irving, and George Catlin. |
| | **3.3.6** Describe the migrations, settlements, relocations and forced removals of American Indians. |
| | **3.3.7** Describe cowboy life and cattle drives as typified by experiences along such routes as the Chisholm Trail and the impact of Mexican ranching traditions on the cattle industry and cowboy culture. |
| | **3.3.8** Distinguish between the points of view of both American Indians and settlers regarding the opening of territories in Oklahoma for settlement. |
| | **3.3.9** Commemorate Statehood Day, November 16, as the joining of Indian and Oklahoma Territories. |

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| | **3.3.10** Describe the contributions of Oklahoma's military personnel, including the Buffalo Soldiers, the code talkers, and the 45th Infantry. |
| | **3.3.11** Explain how Oklahomans come together to help one another during difficult times, such as recovering from the bombing of the Oklahoma City Murrah Building, exhibiting what has become the "Oklahoma Standard". |
| | **3.3.12** Examine notable historic and present-day Oklahomans utilizing biographies and information texts such as Jim Thorpe, Sequoyah, Will Rogers, Wiley Post, Mickey Mantle, Shannon Lucid, Bill Pickett, Clara Luper, and Maria Tallchief. |
| **3.4** The student will identify and describe basic economic activities creating prosperity in the state of Oklahoma. | **3.4.1** Compare differences among human, natural, and capital resources used to produce goods and services. |
| | **3.4.2** Summarize how the factors of scarcity and surplus and the laws of supply and demand of natural and human resources require people to make choices about producing and consuming goods and services. |
| | **3.4.3** Examine how the development of Oklahoma's major economic activities have contributed to the growth of the state, including, mining and energy industry, agriculture, aviation, tourism, tribal enterprises, and military installations. |