

Arizona Water Story: An Upper Elementary School Unit of Study

An Analysis of Arizona Academic Standards Met by the Water Curriculum

Many of the Arizona Academic Standards can be met by teaching the activities in the Arizona Water Story student unit or by modifying and adapting the activities slightly, while still teaching the intended concept.

Lesson 1 Arizona Geography

Social Studies Standards Grades 4-5

3SS-E1 Demonstrate understanding of the physical and human features that define places and regions in Arizona, including the use of geographic tools to collect, analyze and interpret data with emphasis on:

PO1. identifying Arizona as part of the Southwestern region of the United States

PO2. explaining and using map titles, symbols, scale, cardinal and intermediate directions, and elevation on maps of Arizona

PO3. locating and comparing the three landform regions of Arizona—the plateau, mountain, and desert regions—according to their physical features, plants and animals

PO4. the locations and description of the important physical features in each landform region, including the Grand Canyon, Colorado River, and Mogollon Rim

PO5. the location and significance of the important human features of Arizona, including those in Phoenix, Tucson, Flagstaff, and Yuma

3SS-E2 Describe the impact of interactions between people and the natural environment on the development of places and regions in Arizona, including how people have adapted to and modified the environment, with emphasis on:

PO1. the reasons for migration to, and the settlement and growth of, Phoenix, Mesa, Tucson, Flagstaff, Prescott and Yuma, including mining, ranching, agriculture, and tourism

PO2. how places are connected by movement of people, goods, and ideas, including the connection of Mexico to Arizona

PO3. routes to and through Arizona territory, including the Gila Trail

PO4. how people have depended on the physical environment and its natural resources to satisfy their basic needs, including the consequences of Arizonans' adaptation to, and modification of, the natural environment

3SS-E7 Explain the effects of interactions between human and natural systems, including the changes in the meaning, use, and distribution of natural resources, with emphasis on:

PO1. the physical processes that influence the formation and location of resources, including water inequities in Arizona

PO2. consequences to humans of earthquakes, hurricanes, tornadoes, flash floods, and other natural hazards

PO3. how and why humans modify ecosystems, including deforestation and desertification

PO4. how changes in the natural environment can increase or diminish its capacity to support human activities

PO5. how technological modification in one place often leads to changes in other locations, including how the control of rivers impacts the development of Arizona

PO6. ways that humans depend upon limited resources and adapt to, and affect, the natural environment

PO7. changing ideas and disagreements on the best use of natural resources

3SS-E8 Use geographic knowledge, skills, and perspectives to explain past, present, and future issues, with emphasis on:

PO1. how places and environments influence events and conditions in the past

PO2. how geography is used to improve quality of life, including urban growth and environmental planning

PO3. using geographic knowledge and skills to analyze contemporary issues, including the debate over water use and availability in Arizona

Lesson 2 The Hydrologic (Water) Cycle

Mathematics Standards Grade 4

Strand 1: Number Sense and Operations

Concept 2: Numerical Operations—Understand and apply numerical operations and their relationship to one another.

PO1. Add whole numbers.

PO2. Subtract whole numbers.

PO3. Select the grade-level appropriate operation to solve word problems.

PO4. Solve word problems using grade-level appropriate operations and numbers.

PO5. Multiply multi-digit numbers by two-digit numbers.

PO6. Divide with one-digit divisors.

PO7. State multiplication and division facts through 12s.

PO8. Demonstrate the associative property of multiplication.

PO9. Apply grade-level appropriate properties to assist in computation.

PO10. Apply the symbol: \cdot and $()$ for multiplication, and \leq, \geq .

PO11. Use grade-level appropriate mathematical terminology.

PO12. Add or subtract fractions with like denominators, no regrouping.

PO13. Simplify numerical expressions using the order of operations with grade-appropriate operations on number sets.

Strand 2. Data Analysis, Probability, and Discrete Mathematics

Concept 1: Data Analysis (Statistics)—Understand and apply data collection, organization and representation to analyze and sort data.

PO1. Formulate questions to collect data in contextual situations.

PO2. Construct a single-bar graph, line graph or two-set Vann diagram with appropriate labels and title from organized data.

PO3. Interpret graphical representations and data displays including single-bar graphs, circle graphs, two-set Venn diagrams, and line graphs that display continuous data.

PO4. Answer questions based on graphical representations and data displays including single-bar graphs, circle graphs, two-set Venn Diagrams, and line graphs that display continuous data.

PO5. Identify the mode(s) of given data.

PO6. Formulate predictions from a given set of data.

PO7. Solve contextual problems using graphs, charts, and tables.

Concept 2: Probability—Understand and apply the basic concepts of probability.

PO1. Name the possible outcomes for a probability experiment.

PO2. Describe the probability of events as being more likely, less likely, equally likely, unlikely, certain, impossible, fair or unfair.

PO3. Predict the outcome of a grade-level appropriate experiment.

PO4. Record the data from performing a grade-level appropriate experiment.

PO5. Compare the outcome of an experiment to predictions made prior to performing the experiment.

PO6. Make predictions from the results of student-generated experiments using objects (e.g., coins, spinners, number cubes).

PO7. Compare the results of two repetitions of the same grade-level appropriate probability experiment.

Mathematics Standards Grade 5

Strand 1: Number Sense and Operations

Concept 2: Numerical Operations—Understand and apply numerical operations and their relationship to one another.

PO1. Select the grade-level appropriate operations to solve word problems.

PO2. Solve word problems using grade-level appropriate operations and numbers.

PO3. Multiply whole numbers.

- PO4. Divide with whole numbers.
- PO5. Demonstrate the distributive property of multiplication over addition.
- PO6. Demonstrate the addition and multiplication properties of equality.
- PO7. Apply grade-level appropriate properties to assist in computation.
- PO8. Apply the symbol “{ }” to represent grouping.
- PO9. Use grade-level appropriate mathematical terminology.
- PO10. Simplify fractions to lowest terms.
- PO11. Add or subtract proper fractions and mixed numbers with like denominators with regrouping.
- PO12. Add or subtract decimals.
- PO13. Multiply decimals.
- PO14. Divide decimals.
- PO15. Simplify numerical expressions using the order of operations with grade-appropriate operations on number sets.

Strand 2: Data Analysis, Probability, and Discrete Mathematics

Concept 1: Data Analysis (Statistics)—Understand and apply collection, organization and representation to analyze and sort data.

- PO1. Formulate questions to collect data in contextual situations.
- PO2. Construct a double-bar graph, line plot, frequency table, or three-set Venn diagram with appropriate labels and title from organized data.
- PO3. Interpret graphical representations and data displays including bar graphs (including double-bar), circle graphs, frequency tables, three-set Venn diagrams, and line graphs that display continuous data.
- PO4. Record the data from performing a grade-level appropriate probability experiment.
- PO5. Identify the mode(s) and mean (average) of given data.

PO6. Formulate reasonable predictions from a given set of data.

PO7. Compare two sets of data related to the same investigations.

PO8. Solve contextual problems using graphs, charts, and tables.

Concept 2: Probability—Understand and apply the basic concepts of probability.

PO1. Name the possible outcomes for a probability experiment.

PO2. Describe the probability of events as being:

- certain (represented by “1”),
- impossible, (represented by “0”), or
- neither certain nor impossible (represented by a fraction less than 1).

Science Standards Grade 4

Strand 1: Inquiry Process

Concept 1: Observations, Questions, and Hypotheses—Observe, ask questions, and make predictions.

PO1. Differentiate inferences from observations.

PO2. Formulate a relevant question through observations that can be tested by an investigation. (See M04-S2C1-01)

PO3. Formulate predictions in the realm of science based on observed cause and effect relationships.

PO4. Locate information (e.g., book, article, website) related to an investigation. (See W04-S3C6-01 and R04-S3C1-05).

Concept 3: Analysis and Conclusions—Organize and analyze data, compare to predictions.

PO1. Analyze data obtained in a scientific investigation to identify trends. (See M04-S2C1-03).

PO2. Formulate conclusions based upon identified trends in data. (See M04-S2C1-03).

PO3. Determine that data collected is consistent with the formulated questions.

PO4. Determine whether the data supports the predictions for an investigation.

PO5. Develop new questions and predictions based upon the data collected in the investigation.

Strand 5: Life Science

Concept 3: Organisms and Environments—Understand the relations among various organisms and their environment.

PO1. Describe ways various resources (e.g., air, water, plants, animals, soil) are utilized to meet the needs of a population.

PO2. Differentiate renewable resources from nonrenewable resources.

PO3. Analyze the effect that limited resources (e.g., natural gas, minerals) may have on an environment.

PO4. Describe ways in which resources can be conserved (e.g., by reducing, reusing, recycling, finding substitutes).

Strand 6: Earth and Space Science

Concept 3: Changes in the Earth and Sky—Understand characteristics of weather conditions and climate.

PO1. Identify the sources of water within an environment (e.g., ground water, surface water, atmospheric water, glaciers).

PO2. Describe the distribution of water on the Earth's surface.

PO3. Differentiate between weather and climate as they relate to the southwestern United States.

PO4. Measure changes in weather (e.g., precipitation, wind speed, barometric pressure).

PO5. Interpret the symbols on a weather map to identify the following:

- temperatures
- fronts
- precipitation

PO6. Compare weather conditions in various locations (e.g., regions of Arizona, various U.S. cities, coastal vs. interior geographical regions).

Science Standards—Grade 5

Strand 1: Inquiry Process

Concept 1: Observations, Questions, and Hypotheses—Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources.

PO1. Formulate a relevant question through observations that can be tested by an investigation. (See MO5-S2C1-01)

PO2. Formulate predictions in the realm of science based on observed cause and effect relationships.

PO3. Locate information (e.g., book, article, website) related to an investigation. (See W05-S3C6-01 and R05-S3C1-05)

Concept 3: Analysis and Conclusions—Analyze and interpret data to explain correlations and results; formulate new questions.

PO1. Analyze data obtained in a scientific investigation to identify trends and form conclusions. (See M05-S2C1-03)

PO2. Analyze whether the data is consistent with the proposed explanation that motivated the investigation.

PO3. Evaluate the reasonableness of the outcome of an investigation.

PO4. Develop new investigations and predictions based on questions that arise from the findings of an investigation.

PO5. Identify possible relationships between variables in simple investigations (e.g., time and distance; incline and mass of object).

Concept 4: Communication—Communicate results of investigations.

PO1. Communicate verbally or in writing the results of an inquiry. (W05-S3C3-01)

PO2. Choose an appropriate graphic representation for collected data:

- bar graph
- line graph
- Venn diagram
- model

(See M05-S2C1-02)

PO3. Communicate with other groups or individuals to compare the results of a common investigation.

Lesson 3 Arizona Water Sources

Mathematics Standards—Grade 4

Strand 2: Data Analysis, Probability, and Discrete Mathematics

Concept 2: Probability—Understand and apply the basic concepts of probability.

PO1. Name the possible outcomes for a probability experiment.

PO2. Describe the probability of events as being more likely, less likely, equally likely, unlikely, certain, impossible, fair or unfair.

PO3. Predict the outcome of a grade-level appropriate probability experiment.

PO4. Record the data from performing a grade-level appropriate probability experiment.

PO5. Compare the outcome of an experiment to predictions made prior to performing the experiment.

PO6. Make predictions from the results of student-generated experiments using objects (e.g., coins, spinners, number cubes).

PO7. Compare the results of two repetitions of the same grade-level appropriate probability experiment.

Strand 3: Patterns, Algebra, and Functions

Concept 4: Analysis of Change—Analyze change in a variable over time and in various contexts.

PO1. Identify the change in a variable over time (e.g., an object gets taller, colder, heavier).

PO2. Make simple predictions based on a variable (e.g., increased homework time as you progress through the grades).

Strand 4: Geometry and Measurement

Concept 4: Measurement – Units of Measure; Geometric Objects

PO1. Identify the appropriate measure of accuracy for the area of an object (e.g., sq. feet or sq. miles).

PO2. Compute elapsed time using a clock (e.g., hours and minutes since or until...) or a calendar (e.g., days, weeks, years since or until...).

PO3. Select an appropriate tool to use in a particular measurement situation.

PO4. Approximate measurements to the appropriate degree of accuracy.

PO5. Compare units of measure to determine *more* or *less* relationships including:

- length – yards and miles, meters and kilometers, and
- weight – pounds and tons, grams and kilograms

PO6. State equivalent relationships (e.g., 3 teaspoons = 1 tablespoon, 16 cups = 1 gallon, 2000 pounds = 1 ton).

PO7. Compare the weight of two objects using both U.S. customary and metric units.

PO8. Determine the perimeter of simple polygons (e.g., square, rectangle, triangle).

PO9. Determine the area of squares and rectangles.

PO 10. Differentiate between perimeter and area of quadrilaterals.

Mathematics Standards – Grade 5

Strand 2: Data Analysis, Probability, and Discrete Mathematics

Concept 2: Probability—Understand and apply the basic concepts of probability.

PO1. Name the possible outcomes for a probability experiment.

PO2. Describe the probability of events as being:

- certain (represented by “1”),
- impossible (represented by “0”), or
- neither certain nor impossible (represented by a fraction less than 1).

PO3. Predict the outcome of a grade-level appropriate probability experiment.

PO4. Record the data from performing a grade-level appropriate probability experiment.

PO6. Make predictions from the results of student-generated experiments using objects (e.g., coins, spinners, number cubes).

PO7. Compare the results of two repetitions of the same grade-level appropriate probability experiment.

Mathematics Standards—Grade 6

Strand 2: Data Analysis, Probability, and Discrete Mathematics

Concept 2: Probability—Understand and apply the basic concepts of probability.

PO1. Name the possible outcomes for a probability experiment.

PO2. Express probabilities of a single event as a decimal.

PO3. Predict the outcome of a grade-level appropriate probability experiment.

PO4. Record the data from performing a grade-level appropriate probability experiment.

PO5. Compare the outcome of an experiment to predictions made prior to performing the experiment.

PO6. Make predictions from the results of student-generated experiments using objects (e.g., coins, spinners, number cubes, cards).

PO7. Compare the results of two repetitions of the same grade-level appropriate probability experiment.

Social Studies Standards—Grade 4-5

Focus: Arizona

3SS-E1—Demonstrate understanding of the physical and human features that define places and regions in Arizona, including the use of geographic tools to collect, analyze, and interpret data, with emphasis on:

PO1. identifying Arizona as part of the Southwestern region of the United States

PO2. explaining and using map titles symbols, scale, cardinal and intermediate directions, and elevation on maps of Arizona

PO3. locating and comparing the three landform regions of Arizona—the plateau, mountain, and desert regions—according to their physical features, plants and animals

PO4. the location and description of the important physical features in each landform region, including the Grand Canyon, Colorado River, and Mogollon Rim

PO5. the location and significance of the important human features of Arizona, including those in Phoenix, Tucson, Flagstaff, and Yuma.

Science Standards—Grade 4

Strand 1: Inquiry Process

Concept 1: Observations, Questions, and Hypotheses—Observe, ask questions, and make predictions.

PO1. Differentiate inferences from observations.

PO2. Formulate a relevant question through observations that can be tested by an investigation. (See M04-S2C1-01).

PO3. Formulate predictions in the realm of science based on observed cause and effect relationships.

PO4. Locate information (e.g., book, article, website) related to an investigation. (See W04-S3C6-01 and R04-S3C1-05)

Concept 3: Analysis and Conclusions—Organize and analyze data; compare to predictions.

PO1. Analyze data obtained in a scientific investigation to identify trends. (See M04-S2C1-03)

PO2. Formulate conclusions based upon identified trends in data. (See M04-S2C1-03)

PO3. Determine that data collected is consistent with the formulated question.

PO4. Determine whether the data supports the prediction for an investigation.

PO5. Develop new questions and predictions based upon the data collected in the investigation.

Concept 4: Communication—Communicate results of investigations.

PO1. Communicate verbally or in writing the results of an inquiry. (See W04-S3C3-01)

PO2. Choose an appropriate graphic representation for collected data:

- bar graph
 - line graph
 - Venn diagram
 - Model
- (See Mo4-S2C1-02)

PO3. Communicate with other groups or individuals to compare the results of a common investigation.

Strand 6: Earth and Space Science

Concept 3: Changes in the Earth and Sky—Understand characteristics of weather conditions and climate.

PO1. Identify the sources of water within an environment (e.g., ground water, surface water, atmospheric water, glaciers).

PO2. Describe the distribution of water on the Earth’s surface.

PO3. Differentiate between weather and climate as they relate to the southwestern United States.

PO4. Measure changes in weather (e.g., precipitation, wind speed, barometric pressure).

PO5. Interpret the symbols on a weather map or chart to identify the following:

- temperatures
- fronts
- precipitation

PO6. Compare weather conditions in various locations (e.g., regions of Arizona, various U.S. cities, coastal vs. interior geographical regions).

Science Standards—Grade 5

Strand 1: Inquiry Process

Concept 1: Observations, Questions, and Hypotheses—Formulation predictions, questions, or hypotheses based on observations. Locate appropriate resources.

PO1. Formulate a relevant question through observations that can be tested by an investigation. (See MO5-S2C1-01)

PO2. Formulate predictions in the realm of science based on observed cause and effect relationships.

PO3. Locate information (e.g., book, article, website) related to an investigation. (See W05-S3C6-01 and R05-S3C1-05)

Concept 3: Analysis and Conclusions—Analyze and interpret data to explain correlations and results; formulate new questions.

PO1. Analyze data obtained in a scientific investigation to identify trends and form conclusions. (M05-S2C1-03)

PO2. Analyze whether the data is consistent with the proposed explanation that motivated the investigation.

PO3. Evaluate the reasonableness of the outcome of an investigation.

PO4. Develop new investigations and predictions based on questions that arise from the findings of an investigation.

PO5. Identify possible relationships between variables in simple investigations (e.g., time and distance; incline and mass of object).

Concept 4: Communication—Communicate results of investigations.

PO1. Communicate verbally or in writing the results of an inquiry. (See W05-S3C3-01)

PO2. Choose an appropriate graphic representation for collected data:

- bar graph
- line graph
- Venn diagram
- model

(See M05-S2C1-02)

PO3. Communicate with other groups or individuals to compare the results of a common investigation.

Lesson 4 The Arizona Water Story Video

Social Studies Standards—Grades 4-5

1SS-E2 Describe the legacy and cultures of prehistoric American Indians in Arizona, including the impact of, and adaptations to geography, with emphasis on:

PO1. how archaeological and anthropological research gives us information about prehistoric people

PO2. characteristics of hunter-gatherer societies, including their development of tools and adaptation to environments

PO3. development of agriculture with the domestication of plants

PO4. the distinctive cultures of the Anasazi, Hohokam, and Mogollon, including where they lived, their agriculture, housing, decorative arts, and trade networks

PO5. how prehistoric cultures adapted to, and altered, their environment, including irrigation canals and housing

1SS-E4 Describe the economic, social, and political life in the Arizona Territory and the legacy of various cultural groups to modern Arizona, with emphasis on:

PO1. how Arizona became a part of the United States through the Mexican Cession and the Gadsden Purchase

PO2. the conflict of cultures that occurred between newcomers and Arizona Indian groups, including the Indian Wars

PO3. the lives and contributions of various cultural and ethnic groups, including American Indians, Hispanic, and newcomers from the United States and other parts of the world

PO4. the importance and contributions of various occupations to the growing Arizona communities, including soldiers (Buffalo Soldiers), miners, merchants, freighters, homemakers, ranchers, cowboys, farmers and railroad workers.

3SS-E1 Demonstrate understanding of the physical and human features that define places and regions in Arizona, including the use of geographic tools to collect, analyze, and interpret data, with emphasis on:

PO1. identifying Arizona as part of the Southwestern region of the United States

PO2. explaining and using map titles, symbols, scale, cardinal and intermediate directions, and elevation on maps of Arizona

PO3. locating and comparing the three landform regions of Arizona—plateau, mountain, and desert regions—according to their physical features, plants and animals

PO4. the location and description of the important physical features in each landform region, including the Grand Canyon, Colorado River, and Mogollon Rim

PO5. the location and significance of the important human features of Arizona, including those in Phoenix, Tucson, Flagstaff, and Yuma

3SS-E2 Describe the impact of interactions between people and the natural environment on the development of places and regions in Arizona, including how people have adapted to and modified the environment, with emphasis on:

PO1. the reasons for migration to, and the settlement and growth of, Phoenix, Mesa, Tucson, Flagstaff, Prescott and Yuma, including, mining, ranching, agriculture and tourism

PO2. how places are connected by movement of people, goods, and ideas, including the connection of Mexico to Arizona

PO3. routes to and through Arizona territory, including the Gila Trail

PO4. how people have depended on the physical environment and its natural resources to satisfy their basic needs, including the consequences of Arizonans' adaptation to, and modification of, the natural environment

3SS-E7 Explain the effect of interactions between human and natural systems, including the changes in the meaning, use, and distribution of natural resources, with emphasis on:

PO1. the physical processes that influence the formation and location of resources, including water inequities in Arizona

PO2. consequences to humans of earthquakes, hurricanes, tornadoes, flash floods, and other natural hazards

PO3. how and why humans modify ecosystems, including deforestation and desertification

PO4. how changes in the natural environment can increase or diminish its capacity to support human activities

PO5. how technological modification in one place often leads to changes in other locations, including how the control of rivers impacts the development of Arizona

PO6. ways that humans depend upon limited resources and adapt to, and affect, the natural environment

PO7. changing ideas and disagreements on the best use of natural resources

3SS-E8 Use geographic knowledge, skills, and perspectives to explain past, present, and future issues, with emphasis on:

PO1. how places and environments influence events and conditions in the past

PO2. how geography is used to improve quality of life, including urban growth and environmental planning

PO3. using geographic knowledge and skills to analyze contemporary issues, including the debate over water use and availability in Arizona

Science Standards—Grade 4

Strand 3: Science in Personal and Social Perspectives

Concept 1: Changes in Environments—Describe the interactions between human populations, natural hazards, and the environment.

PO1. Describe how natural events and human activities have positive and negative impacts on environments (e.g., fire, floods, pollution, dams).

PO2. Evaluate the consequences of environmental occurrences that happen either rapidly (e.g., fire, flood, tornado) or over a long period of time (e.g., drought, melting ice caps, the greenhouse effect, erosion).

Strand 4: Life Science

Concept 3: Organisms and Environments—Understand the relationships among various organisms and their environment.

PO1. Describe ways various resources (e.g., air, water, plants, animals, soil) are utilized to meet the needs of a population.

PO2. Differentiate renewable resources from nonrenewable resources.

PO3. Analyze the effect that limited resources (e.g., natural gas, minerals) may have on an environment.

PO4. Describe ways in which resources can be conserved (e.g., by reducing, reusing, recycling, finding substitutes).

Strand 6: Earth and Space Science

Concept 3: Changes in the Earth and Sky—Understand characteristics of weather conditions and climate.

PO1. Identify the sources of water within an environment (e.g., ground water, surface water, atmospheric water, glaciers).

PO2. Describe the distribution of water on the Earth's surface.

PO3. Differentiate between weather and climate as they relate to the southwestern United States.

PO4. Measure changes in weather (e.g., precipitation, wind speed, barometric pressure).

PO5. Interpret the symbols on a weather map or chart to identify the following:

- temperatures
- fronts
- precipitation

PO6. Compare weather conditions in various locations (e.g., regions of Arizona, various U.S. cities, coastal vs. interior geographical regions).

Science Standards—Grade 5

Strand 3: Science in Personal and Social Perspectives

Concept 1: Changes in Environments—Describe the interactions between human populations, natural hazards, and the environment.

PO1. Explain the impacts of natural hazards on habitats (e.g., global warming, floods, asteroid or large meteor impacts).

PO2. Propose a solution, resource, or product that addresses a specific human, animal, or habitat need.

PO3. Evaluate the possible strengths and weaknesses of a proposed solution to a specific problem relevant to human, animal, or habitat needs.

Lesson 5 Arizona Water Use Today

Social Studies Standards—Grades 4-5

3SS-E1 Demonstrate understanding of the physical and human features that define places and regions in Arizona, including the use of geographic tools to collect, analyze, and interpret data, with emphasis on:

PO 1. Identifying Arizona as part of the Southwestern region of the United States

PO 2. Explaining and using map titles, symbols, scale, cardinal and intermediate directions, and elevation on maps of Arizona

PO 3. Locating and comparing the three landform regions of Arizona—the plateau, mountain, and desert regions—according to their physical features, plants and animals

PO 4. The location and description of the important physical features in each landform region, including the Grand Canyon, Colorado River, and Mogollon Rim

PO 5. The location and significance of the important human features of Arizona, including those in Phoenix, Tucson, Flagstaff, and Yuma

3SS-E2

Describe the impact of interactions between people and the natural environment on the development of places and regions in Arizona, including how people have adapted to and modified the environment, with emphasis on:

PO1. the reasons for migration to, and the settlement and growth of, Phoenix, Mesa, Tucson, Flagstaff, Prescott and Yuma, including mining, ranching, agriculture, and tourism

PO2. how places are connected by movement of people, goods, and ideas, including the connection of Mexico to Arizona

PO3. routes to and through Arizona territory, including the Gila Trail

PO4. how people have depended on the physical environment and its natural resources to satisfy their basic needs, including the consequences of Arizonans' adaptation to, and modification of, the natural environment

Mathematics Standards—Grade 4

Strand 1: Number Sense and Operations

Concept 2: Numerical Operations

PO1. Add whole numbers.

PO2. Subtract whole numbers.

PO3. Select the grade-level appropriate operations to solve word problems.

PO4. Solve word problems using grade-level appropriate operations and numbers.

- PO5. Multiply multi-digit numbers by two-digit numbers.
- PO6. Divide with one-digit divisors.
- PO7. State multiplications and division facts through 12s.
- PO8. Demonstrate the associative property of multiplication.
- PO9. Apply grade-level appropriate mathematical terminology.
- PO10. Apply the symbol: \cdot and $()$ for multiplication, and \leq, \geq .
- PO11. Use grade-level appropriate mathematical terminology.
- PO12. Add or subtract fractions with like denominators, no regrouping.
- PO13. Simplify numerical expressions using the order of operations with grade-appropriate operations on number sets.

Mathematics Standards—Grade 5

Concept 2: Numerical Operations

- PO1. Select the grade-level appropriate operation to solve word problems.
- PO2. Solve word problems using grade-level appropriate operations and numbers.
- PO3. Multiply whole numbers.
- PO4. Divide whole numbers.
- PO5. Demonstrate the distributive property of multiplication over addition.
- PO6. Demonstrate the addition and multiplication properties of equality.
- PO7. Apply grade-level appropriate properties to assist in computation.
- PO8. Apply the symbol “ $\{ }$ ” to represent grouping.
- PO9. Use grade-level appropriate mathematical terminology.
- PO10. Simplify fractions to lowest terms.
- PO11. Add or subtract proper fractions and mixed numbers with like denominators with regrouping.

PO12. Add or subtract decimals.

PO13. Multiply decimals.

PO14. Divide decimals.

PO15. Simplify numerical expression using the order of operations with grade-appropriate operations on number sets.

Language Arts Standards—Grade 4

Strand 2: Writing Elements

Concept 1: Ideas and Content—Writing is clear and focused, holding the reader’s attention throughout. Main ideas stand out and are developed by strong support and rich details. Purpose is accomplished.

PO1. Express ideas that are clear and directly related to the topic.

PO2. Provide content and selected details that are well-suited to audience and purpose.

PO3. Use relevant details to provide adequate support for the ideas.

Concept 2: Organization—Organization addresses the structure of the writing and integrates the central meaning and patterns that hold the piece together.

PO1. Use a structure that fits the type of writing (e.g., letter format, narrative, lines of poetry).

PO2. Create a beginning that captures the reader’s interest.

PO3. Place details appropriately to support the main ideas.

PO4. Use a variety of transitional words that creates smooth connections between ideas.

PO5. Create an ending that provides a sense of resolution or closure.

PO6. Construct a paragraph that groups sentences around a topic.

Concept 3: Voice—Voice will vary according to the type of writing, but should be appropriately formal or casual, distant or personal, depending on the audience and purpose.

PO1. Show awareness of the audience through word choice and style.

PO2. Convey a sense of originality, sincerity, liveliness, or humor appropriate to topic and type of writing.

Concept 4: Word Choice—Word choice reflects the writer’s use of specific words and phrases to convey the intended message and employs a variety of words that are functional and appropriate to the audience and purpose.

PO1. Use a variety of specific and accurate words that effectively convey the intended message.

PO2. Use descriptive words and phrases that energize the writing.

PO3. Apply vocabulary and/or terminology appropriate to the type of writing.

PO4. Use literal and figurative language in a variety of ways (e.g., imitating, creating new words, rhyming), although may be inconsistent or experimental. (See R04-S1C4-04, 05)

Concept 5: Sentence Fluency—Fluency addresses the rhythm and flow of language. Sentences are strong and varied in structure and length.

PO1. Write simple and compound sentences.

PO2. Write sentences that flow together and sound natural when read aloud.

PO3. Vary sentence beginnings, lengths, and patterns to enhance the flow of the writing.

PO4. Use effective and natural dialogue when appropriate.

Concept 6: Conventions—Conventions addresses the mechanics of writing, including capitalization, punctuation, spelling, grammar and usage, and paragraph breaks.

PO1. Use capital letters for:
a. proper nouns (i.e., names, days, months)
b. titles
c. names of places
d. abbreviations
e. literary titles (i.e., book, story, poem)

PO2. Punctuate endings of sentences using:
a. periods
b. question marks
c. exclamation points

PO3. Use commas to punctuate:

- a. items in a series
- b. greetings and closings of letters
- c. dates
- d. introductory words

PO4. Use quotation marks to punctuate:

- a. dialogue (although may be inconsistent or experimental)
- b. titles

PO5. Use a colon to punctuate time.

PO6. Use apostrophes to punctuate:

- a. contractions
- b. singular possessive

PO7. Spell high frequency words correctly.

PO8. Use common spelling patterns/generalizations to spell words correctly, including:

- a. r-controlled
- b. diphthong
- c. vowel digraphs
- d. CVC words
- e. CCVC
- f. CVCC
- g. silent e
- h. irregular plurals
- i. affixes

PO9. Spell simple homonyms correctly in context.

PO10. Use resources (e.g., dictionaries, word walls) to spell correctly.

PO11. Use paragraph breaks to indicate an organizational structure.

PO12. Use the following parts of speech correctly in simple sentences:

- a. nouns
- b. action verbs
- c. personal pronouns
- d. adjectives
- e. conjunctions

PO 13. Use subject/verb agreement in simple and compound sentences.

Strand 3: Writing Applications

Concept 2: Expository—Expository writing includes nonfiction writing that describes, explains, informs, or summarizes ideas and content. The writing supports a thesis based on research, observation, and/or experience.

PO1. Record information (e.g., observations, notes, lists, charts, map labels and legends) related to the topic.

PO2. Write an expository paragraph that contains:

- a. a topic sentence
- b. supporting details
- c. relevant information

PO3. Write in a variety of expository forms (e.g., essay, summary, newspaper article, reflective paper, log, journal).

Language Arts Standards—Grade 5

Strand 2: Writing Elements

Concept 1: Ideas and Content—Writing is clear and focused, holding the reader’s attention throughout. Main ideas stand out and are developed by strong support and rich details. Purpose is accomplished.

PO1. Express ideas that are clear and directly related to the topic.

PO2. Provide content and selected details that are well-suited to audience and purpose.

PO3. Use relevant details to provide adequate support for the ideas.

Concept 2: Organization—Organization addresses the structure of the writing and integrates the central meaning and patterns that hold the piece together.

PO1. Use a structure that fits the type of writing (e.g., letter format, narrative, lines of poetry).

PO2. Create a beginning that captures the reader’s interest.

PO3. Place details appropriately to support the main ideas.

PO4. Use a variety of transitional words that creates smooth connections between ideas.

PO5. Create an ending that provides a sense of resolution or closure.

PO6. Construct a paragraph that groups sentences around a topic.

Concept 3: Voice—Voice will vary according to the type of writing, but should be appropriately formal or casual, distant or person, depending on the audience and purpose.

PO1. Show awareness of the audience through word choice and style.

PO2. Convey a sense of originality, sincerity, liveliness, or humor appropriate to topic and type of writing.

PO3. Use language appropriate for topic and purpose.

Concept 4: Word Choice—Word choice reflects the writer’s use of specific words and phrases to convey the intended message and employs a variety of words that are functional and appropriate to the audience and purpose.

PO1. Use a variety of specific and accurate words that effectively convey the intended message.

PO2. Use descriptive words and phrases that energize the writing.

PO3. Apply vocabulary and/or terminology appropriate to the type of writing.

PO4. Use literal and figurative language in a variety of ways (e.g., imitating, creating new works, rhyming), although may be inconsistent or experimental. (See R04-S1C4-04, 05)

Concept 5: Sentence Fluency—Fluency addresses the rhythm and flow of language. Sentences are strong and varied in structure and length.

PO1. Write simple and compound sentences.

PO2. Write sentences that flow together and sound natural when read aloud.

PO3. Vary sentence beginnings, lengths, and patterns to enhance the flow of the writing.

PO4. Use effective and natural dialogue when appropriate.

Concept 6: Conventions—Conventions addresses the mechanics of writing, including capitalization, punctuation, spelling, grammar and usage, and paragraph breaks.

PO1. Use capital letters correctly for:

a. proper nouns:

- place names

- holidays
 - languages
 - historical events
 - organizations
- b. literary titles (i.e., book, story, poem, play, song)
- c. titles
- d. abbreviations
- e. words used as names (e.g., Mother, Uncle Jim)

PO2. Punctuate endings of sentences using:

- a. periods
- b. question marks
- c. exclamation points

PO3. Use commas to punctuate:

- a. items in a series
- b. greetings and closings of letters
- c. dates introductory words
- d. dialogue
- e. direct address

PO4. Use quotation marks to punctuate:

- a. simple dialogue
- b. titles

PO5. Use colons to punctuate:

- a. time
- b. business letter salutations

PO6. Use apostrophes to punctuate:

- a. contractions
- b. singular possessive

PO7. Spell high frequency words correctly.

PO8. Use common spelling patterns/generalizations to spell words correctly, including:

- a. irregular plurals
- b. silent e
- c. I before e
- d. words ending in -y
- e. doubling final consonant

PO9. Spell homonyms correctly in context.

PO10. Use resources (e.g., dictionaries, word walls) to spell correctly.

PO11. Use paragraph breaks to indicate an organizational structure.

PO12. Use the following parts of speech correctly in simple sentences:

- a. nouns
- b. action verbs
- c. personal pronouns
- d. adjectives
- e. conjunctions

PO 13. Use subject/verb agreement in simple and compound sentences.

Strand 3: Writing Applications

Concept 2: Expository—Expository writing includes nonfiction writing that describes, explains, informs, or summarizes ideas and content. The writing supports a thesis based on research, observation, and/or experience.

PO1. Record information (e.g., observations, notes, lists, charts, map labels and legends) related to the topic.

PO2. Write an expository paragraph that contains:

- d. a topic sentence
- e. supporting details
- f. relevant information

PO3. Write in a variety of expository forms (e.g., essay, summary, newspaper article, reflective paper, log, journal).

Language Arts Standards—Grade 6

Strand 2: Writing Components

Concept 1: Ideas and Content—Writing is clear and focused, holding the reader’s attention throughout. Main ideas stand out and are developed by strong support and rich details. Purpose is accomplished.

PO1. Use clear, focused ideas and details to support the topic.

PO2. Provide content and selected details that are well suited to audience and purpose.

PO3. Develop a sufficient explanation or exploration of the topic.

PO4. Include ideas and details that show original perspective.

Concept 2: Organization—Organization addresses the structure of the writing and integrates the central meaning and patterns that hold the piece together.

PO1. Use a structure that fits the type of writing (e.g., letter format, narrative, play, essay).

PO2. Develop a strong beginning or introduction that draws in the reader.

PO3. Place details appropriately to support the main idea.

PO4. Include effective transitions among all elements (sentences, paragraphs, ideas).

PO5. Construct paragraphs by arranging sentences with an organizing principle (e.g., to develop a topic, to indicate a chronology).

PO6. Create an ending that provides a sense of resolution or closure.

Concept 3: Voice—Voice will vary according to the type of writing, but should be appropriately formal or casual, distant or personal, depending on the audience and purpose.

PO1. Show awareness of the audience through word choice and style.

PO2. Convey a sense of identity through originality, sincerity, liveliness, or humor appropriate to the topic and type of writing.

PO3. Use language appropriate for the topic and purpose.

PO4. Choose appropriate voice (e.g., formal, informal) for the audience and purpose.

Concept 4: Word Choice—Word choice reflects the writer’s use of specific words and phrases to convey the intended message and employs a variety of words that are functional and appropriate to the audience and purpose.

PO1. Use accurate, specific, powerful words that effectively convey the intended message.

PO2. Use words and phrases that consistently support style and type of writing.

PO3. Use vocabulary that is original, varied, and natural.

PO4. Use literal and figurative language where appropriate to purpose. (See R06-S1C4-04)

Concept 5: Sentence Fluency—Fluency addresses the rhythm and flow of language. Sentences are strong and varied in structure and length.

PO1. Write simple and compound sentences.

PO2. Write sentences that flow together and sound natural when read aloud.

PO3. Vary sentence beginnings, lengths, and patterns to enhance the flow of the writing.

PO4. Use effective and natural dialogue when appropriate.

Concept 6: Conventions—Conventions addresses the mechanics of writing, including capitalization, punctuation, spelling, grammar and usage, and paragraph breaks.

PO1. Use capital letters correctly for:

a. proper nouns

- holidays
- product names
- languages
- historical events
- organizations
- academic courses (e.g., algebra/Algebra 1)
- place
- regional names (e.g., West Coast)

b. words used as names (e.g., Grandpa, Aunt Lyn)

c. literary titles (i.e., story, poem, play, song)

d. titles

e. abbreviations

f. proper adjectives

PO2. Use commas to correctly punctuate:

a. items in a series

b. greetings and closings of letters

c. introductory words

d. direct address

e. interrupters

f. compound sentences

PO3. Use quotation commas to correctly punctuate:

a. dialogue

b. titles of short works (e.g., chapter, story, article, song, poem)

c. exact words from sources

PO4. Use italics (in typed copy) and underlining (in handwriting) to indicate titles of longer works (e.g., books, plays, magazines, movies, TV series).

PO5. Use colons to punctuate business letter salutations.

PO6. Use apostrophes to punctuate:

- a. contractions
- b. singular possessives

PO7. Spell high frequency words correctly.

PO8. Use common spelling patterns/generalizations to spell words correctly.

PO9. Use homonyms correctly in context.

PO10. Use resources to spell correctly.

PO11. Use paragraph breaks to indicate an organizational structure.

PO12. Use the following parts of speech correctly in simple sentences:

- a. nouns
- b. action/linking verbs
- c. personal pronouns
- d. adjectives
- e. adverbs
- f. conjunctions
- g. prepositions
- h. interjections

PO13. Use subject/verb agreement in simple and compound sentences.

Strand 3: Writing Applications

Concept 2: Expository—Expository writing includes nonfiction writing that describes, explains, informs, or summarizes ideas and content. The writing supports a thesis based on research, observation, and/or experience.

PO1. Record information (e.g., observations, notes, lists, charts, map labels and legends) related to the topic.

PO2. Write a summary based on the information gathered that includes(s):

- a. a topic sentence
 - b. supporting details
 - c. relevant information
- (See R06-S3C1-02)

PO3. Write a process essay that includes:

- a. a thesis statement

- b. supporting details
- c. introductory, body, and concluding paragraphs

Lesson 6 Personal Water Conservation

Mathematics Standards—Grade 4

Strand 1: Number Sense & Operations

Concept 2: Numerical Operations—Understand and apply numerical operations and their relationship to one another.

- PO1. Add whole numbers.
- PO2. Subtract whole numbers.
- PO3. Select the grade-level appropriate operation to solve word problems.
- PO4. Solve word problems using grade-level appropriate operations and numbers.
- PO5. Multiply multi-digit numbers by two-digit numbers.
- PO6. Divide with one-digit divisors.
- PO7. State multiplication and division facts through 12s.
- PO8. Demonstrate the associative property of multiplication.
- PO9. Apply grade level appropriate properties to assist in computation.
- PO10. Apply the symbol: \bullet and $()$ for multiplication, and \leq , \geq .
- PO11. Use grade-level appropriate mathematical terminology.
- PO 12. Add or subtract fractions with like denominators, no regrouping.
- PO13. Simplify numerical expressions using the order of operations with grade-appropriate operations on number sets.

Strand 3: Patterns, Algebra, and Functions

Concept 4: Analysis of Change—Analyze change in a variable over time and in various contexts.

PO1. Identify the change in a variable over time (e.g., an object gets taller, colder, heavier).

PO2. Make simple predictions based on a variable (e.g., increase homework time as you progress through the grades).

Mathematics Standards—Grade 5

Strand 1: Number Sense and Operations

Concept 2: Understand and apply numerical operations and their relationship to one another.

PO. 1. Select the grade-level appropriate operation to solve word problems.

PO. 2. Solve word problems using grade-level appropriate operations and numbers.

PO3. Multiply whole numbers.

PO4. Divide with whole numbers.

PO5. Demonstrate the distributive property of multiplication over addition.

PO6. Demonstrate the addition and multiplication properties of equality.

PO7. Apply grade-level appropriate properties to assist in computation.

PO8. Apply the symbol “[]” to represent grouping.

PO9. Use grade-level appropriate mathematical terminology.

PO10. Simplify fractions to lowest terms.

PO11. Add or subtract proper fractions and mixed numbers with like denominators with regrouping.

PO12. Add or subtract decimals.

PO13. Multiply decimals.

PO14. Divide decimals.

PO15. Simplify numerical expressions using the order of operations with grade-appropriate operations on number sets.

Strand 3: Patterns, Algebra and Functions

Concept 4: Analysis of Change—Analyze change in a variable over time and in various contexts.

PO1. Describe patterns of change:

- constant rate (speed of movement of the hands on a clock), and
- increasing or decreasing rate (rate of plant growth).