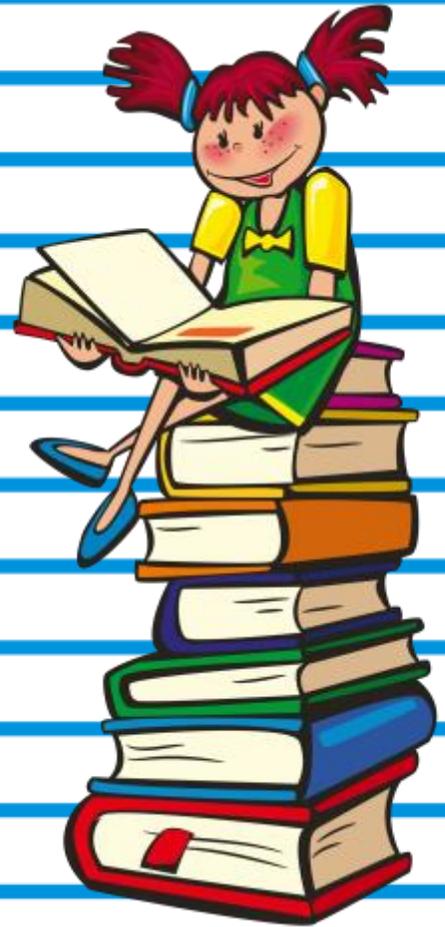


Older Class

Unit Topic  
Standards  
2017-18



(Note: This document only lists Arizona Science and Social Studies standards. Since these include all 3-6 grade standards- not all will be covered in class.)

## August 21 - September 1 Geography

- Discuss that different types of maps (e.g., political, physical, thematic) serve various purposes.
- Recognize and locate physical and human features using maps, illustrations, images, or globes. Identify the location of significant geographic features from content studied on a physical or political map.
  - a. *physical (i.e., river, lake, mountain range, coast, sea, desert, gulf, bay, strait, plain, valley, volcano, peninsula, isthmus, canyon, plateau, mesa, oasis, dunes, seven continents, four oceans, mountain range, isthmus, tree line, swamp,)*
  - b. *human (i.e., equator, Northern and Southern, North and South Poles, city four hemispheres, city, state, country, harbor, dams, territory, county, roads, railroad, province)*
- Interpret political and physical maps using the following elements: *alpha-numeric grids, title, compass rose -cardinal and intermediate directions, symbols, legend, scale, road map index, grid (latitude and longitude)*
- Locate features in the world (e.g., continents, waterways, mountain ranges, cities) on a map using latitude and longitude.
- Construct a map of a familiar place (e.g., school, home, neighborhood, fictional place) that includes a title, compass rose, symbols, and legend.
- Construct maps using symbols to represent human and physical features.
- Construct charts and graphs to display geographic information.
- Use different types of maps to solve problems (i.e., road maps –distance, resource maps-products, historical maps- boundaries, thematic map-climates).
- Interpret information from a variety of maps:
  - a. contour
  - b. population density
  - c. natural resource
  - d. historical maps
- Identify purposes of, and differences among, maps, globes, aerial photographs, charts, and satellite images.
- Interpret thematic maps, graphs, charts, and databases depicting various aspects of world regions using geographic information. (Apply to regions studied).

## **Body Systems (August 21 - September 1)**

Understand the relationships between structures and functions of organisms.

Identify the functions and parts of the skeletal system:

- protection – rib cage, cranium
- support – vertebrae
- movement – pelvis, femur, hip

Identify the following types of muscles:

- cardiac – heart
- smooth – stomach
- skeletal – biceps

Identify the functions and parts of the nervous system:

- control center – brain
- relay mechanism – spinal cord
- transport messages – nerves

Distinguish between voluntary and involuntary responses.

Explain the hierarchy of cells, tissues, organs, and systems.

Describe how the various systems of living organisms work together to perform a vital function:

- respiratory and circulatory
- muscular and skeletal
- digestive and excretory

## **Mesopotamia/ Archaeology & Geography (Sept. 5-15)**

Locate major physical and human features from content studied (e.g., Greece, Canada, Spain, United States) on maps and globes.

Describe how physical and human characteristics of places change from past to present.

*Retell stories to describe past events, people and places*

Use the following to interpret historical data:

- timelines – B.C.E. and B.C.; C.E. and A.D.
- graphs, tables, charts, and maps

Locate information using both primary and secondary sources.

Construct timelines of the historical era being studied (e.g., presidents/ world leaders, key events, people).

Construct charts, graphs, and narratives using historical data.

Interpret historical data displayed in graphs, tables, and charts.

Formulate questions that can be answered by historical study and research.

Determine the credibility and bias of primary and secondary sources.

Analyze cause and effect relationships between and among individuals and/or historical events.

Describe the lifestyles of humans in the Paleolithic and Neolithic Ages.

Determine how the following factors influenced groups of people to develop into civilizations Mesopotamia,:

- farming methods
- domestication of animals
- division of labor
- geographic factors

Describe the importance of the following river valleys in the development of ancient civilizations: Tigris and Euphrates - Mesopotamia

Compare the forms of government of the following ancient civilizations:

c. Mesopotamia – laws of Hammurabi

d. Egypt – theocracy

e. China – dynasty

Analyze the impact of cultural and scientific contributions of ancient civilizations on later civilizations: Mesopotamia (i.e., laws of Hammurabi) (i.e., astronomy, agriculture)

Describe scientific and cultural advancements (e.g., networks of roads, aqueducts, art and architecture, literature and theatre, mathematics, philosophy) in ancient civilizations.

Describe the impact of the Laws of Hammurabi on the lives of ancient people and how it relates to current laws.

Describe elements of culture of a community or nation (e.g., food, clothing, housing, sports, customs, beliefs) in areas studied.

Discuss that Ancient Civilizations have changed from past to present.

*Discuss the major economic activities and land use (e.g., harvesting natural resources, agricultural, industrial, residential, commercial, recreational) of areas studied.*

Describe the major economic activities and land use patterns (e.g., agricultural, industrial, residential, commercial, recreational, harvesting of natural resources) of regions studied.

Describe elements of culture in areas studied (e.g., Mexico, Central and South America).

Identify how factors such as river/coastal civilizations and trade influenced the location, distribution, and interrelationships of economic activities over time and in different regions.

Identify cultural norms that influence different social, political, and economic activities of men and women.

## **Ecosystems & Structure of Life (September 18-29)**

Compare structures in plants (e.g., roots, stems, leaves, flowers) and animals (e.g., muscles, bones, nerves) that serve different functions in growth and survival.

Classify animals by identifiable group characteristics:

vertebrates – mammals, birds, fish, reptiles, amphibians

invertebrates – insects, arachnids

Explain the importance of water to organisms.

Describe the basic structure of a cell, including:

· cell wall                      · cell membrane                      · nucleus

Describe the function of each of the following cell parts:

· cell wall                      · cell membrane                      · nucleus

Differentiate between plant and animal cells.

Relate the following structures of living organisms to their functions:

Animals

- respiration – gills, lungs
- digestion – stomach, intestines
- circulation – heart, veins, arteries, capillaries
- locomotion – muscles, skeleton

Plants

- transpiration – stomata, roots, xylem, phloem
- absorption – roots, xylem, phloem
- response to stimulus (phototropism, hydrotropism, geotropism) – roots, xylem, phloem

Understand the life cycles of plants and animals.

Compare life cycles of various plants (e.g., conifers, flowering plants, ferns).

Explain how growth, death, and decay are part of the plant life cycle.

Understand the relationships among various organisms and their environment.

Identify the living and nonliving components of an ecosystem.

Examine an ecosystem to identify microscopic and macroscopic organisms.

Explain the interrelationships among plants and animals in different environments:

- producers – plants
- consumers – animals
- decomposers – fungi, insects, bacteria

Describe how plants and animals cause change in their environment.

Describe how environmental factors (e.g., soil composition, range of temperature, quantity and quality of light or water) in the ecosystem may affect a member organism's ability to grow, reproduce, and thrive.

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

Explain that sunlight is the major source of energy for most ecosystems.

Describe how the following environmental conditions affect the quality of life: water quality, climate, population density, smog

Identify plant and animal adaptations.

Identify adaptations of plants and animals that allow them to live in specific environments.

Describe ways that species adapt when introduced into new environments.

Cite examples of how a species' inability to adapt to changing conditions in the ecosystem led to the extinction of that species.

Recognize that successful characteristics of populations are inherited traits that are favorable in a particular environment.

Give examples of adaptations that allow plants and animals to survive.

camouflage – horned lizards, coyotes

mimicry – Monarch and Viceroy butterflies

physical – cactus spines

mutualism – species of acacia that harbor ants, which repel other harmful insects

## **Money & Finance (Oct 2-6)**

Demonstrate effectiveness of a specific health product (e.g., shampoo, soap)

Compare cost of products

Identify how scarcity requires people to make choices due to their unlimited wants and needs.

Identify opportunity costs in personal decision-making situations.

Give examples of trade in the local community (e.g., farmers supply the grocer).

Discuss reasons (e.g., labor, raw materials, energy resources) why some goods are made locally and some are made in other parts of the United States and world.

Discuss how producers use natural, human, and capital resources to create goods and services.

Explain the decision for a personal spending choice.

Identify that specialization improves standards of living (e.g., medical care, home building, agriculture).

Give examples of how voluntary exchanges of goods and services can be mutually beneficial (e.g., ice cream vendor receives money, child receives ice cream; doctor receives monetary benefit, patient receives care).

Identify how limited resources and unlimited human wants cause people to choose some things and give up others.

Determine how scarcity, opportunity costs, and trade-offs influence decision-making.

Explain why specialization improves standards of living.

Compare how money, as opposed to barter, facilitates trade.

Explain how trade promoted economic growth throughout world regions.

Describe why (e.g., schools, fire, police, libraries) state and local governments collect taxes.

Describe how education, skills, and career choices affect income.

Discuss how profit is an incentive to entrepreneurs.

Describe risks that are taken by entrepreneurs.

Identify the role of financial institutions in providing services (e.g., savings accounts, loans).

Describe how competition, markets, and prices influence peoples' behavior.

Identify how people earn income by selling their labor to businesses or governments.

Describe ways in which entrepreneurs take risks to develop new goods and services.

Describe the function of private business in producing goods and services.

Discuss the function of banks in providing checking accounts, savings accounts, and loans.

Explain the function of government in providing certain goods and services through taxation.

Discuss costs and benefits of personal spending and saving choices.

Describe how interest is an incentive to saving money.

Explain how the following are used to purchase goods and services:

- cash
- check
- money order
- debit card
- credit card

Compare the cost and benefits of using credit.

Explain how interest is the price paid to borrow money.

Describe the factors lenders consider before lending money.

## **Arizona Native People (October 9-20)**

Describe the legacy and cultures of prehistoric people in the Americas:

- characteristics of hunter-gatherer societies
- development of agriculture

Describe the cultures and contributions of the Mogollon, Ancestral Puebloans (Anasazi), and Hohokam (e.g., location, agriculture, housing, arts, trade networks; adaptation and alteration of the environment).

Identify other groups (e.g., Patayan, Sinagua, Salado) residing in the Southwest during this period.

Describe the characteristics of hunting and gathering societies in the Americas.

Describe how farming methods and domestication of animals led to the development of cultures and civilizations from hunting and gathering societies.

Describe the cultures of the Mogollon, Ancestral Puebloans (Anasazi), and Hohokam:

- location, agriculture, housing, arts, and trade networks
- how these cultures adapted to and altered their environment

Describe the ways European colonists and Native Americans viewed, adapted, and used the environment.

## **Geology & Earth Science (October 23-27)**

Describe the major factors that could impact a human population (e.g., famine, drought, disease, improved transportation, medical breakthroughs).

Describe the beneficial and harmful impacts of natural events and human activities on the environment (e.g., forest fires, flooding, pesticides).

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

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).

Differentiate renewable resources from nonrenewable resources.

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

Identify the basic properties of Earth materials.

Identify the layers of the Earth: crust, mantle, core (inner and outer)

Describe the different types of rocks and how they are formed:

metamorphic Igneous sedimentary

Classify rocks based on the following physical properties: color & texture

Describe fossils as a record of past life forms.

Describe how fossils are formed.

Describe ways humans use Earth materials (e.g., fuel, building materials, growing food).

Describe the composition and interactions between the structure of the Earth and its atmosphere.

Explain the composition, properties, and structure of the Earth's lakes and rivers.

Explain the composition, properties, and structures of the oceans' zones and layers.

Analyze the interactions between the Earth's atmosphere and the Earth's bodies of water (water cycle).

Understand the processes acting on the Earth and their interaction with the Earth systems.

Identify the Earth processes that cause erosion.

Describe how currents and wind cause erosion and land changes.

Describe the role that water plays in the following processes that alter the Earth's surface features: erosion deposition weathering

Compare rapid and slow processes that change the Earth's surface, including:

rapid – earthquakes, volcanoes, floods

slow – wind, weathering

Identify the Earth events that cause changes in atmospheric conditions (e.g., volcanic eruptions, forest fires).

Analyze evidence that indicates life and environmental conditions have changed (e.g., tree rings, fish fossils in desert regions, ice cores).

Understand the processes acting on the Earth and their interaction with the Earth systems.

Explain how water is cycled in nature.

Understand characteristics of weather conditions and climate.

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

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

Describe the impact of extreme natural events (e.g., fires, volcanoes, floods, droughts) on human and physical environments.

Describe the impact of human modifications (e.g., dams, mining, air conditioning, irrigation, agricultural) on the physical environment and ecosystems.

Describe the impact that natural events (e.g., floods, earthquakes, droughts) have on human and physical environments.

Identify the way humans respond to/ prepare for natural hazards (i.e., lightning, flash floods, dust storms, tornadoes, hurricanes, floods, earthquakes) in order to remain safe.

## **U.S. Government & Symbols (October 30-November 3)**

Describe state and national symbols and monuments that represent American democracy and values:

- a. Statue of Liberty
- b. Ellis Island
- c. Lincoln Memorial
- d. the U. S. Capitol
- e. Great Seal of the United States
- f. Arizona symbols (e.g., seal, flag)
- g. war memorials (e.g., Pearl Harbor- Arizona Memorial, WW II, Korean, and Vietnam Memorials)

*Describe the significance of national holidays:*

- a. *Presidents' Day*
- b. *Martin Luther King, Jr. Day*
- c. *Veterans' Day*
- d. *Memorial Day*
- e. *Constitution Day*
- f. *Labor Day*

and freedoms supported by the following documents:

\*Preamble of the U.S. \*Constitution Bill of Rights

\*Statement of Natural Rights as found in the Declaration of Independence (We hold these truths to be self evident.....)

Identify the democratic principles and ideals associated with the following documents:

- d. Mayflower Compact
- e. Declaration of Independence
- f. Articles of Confederation

g. United States Constitution

h. Bill of Rights

Recognize the contributions and roles of the following individuals in creating the American government:

a. John Adams

b. Benjamin Franklin

c. Alexander Hamilton

d. Thomas Jefferson

e. James Madison

f. John Marshall

g. George Washington

## **Westward Expansion (November 6-17)**

Use timelines to identify the time sequence of historical data.

*Recognize how archaeological research adds to our understanding of the past.*

*Use primary source materials (e.g., photos, artifacts, interviews, documents, maps) and secondary source materials (e.g., encyclopedias, biographies) to study people and events from the past.*

*Retell stories to describe past events, people and places.*

Use the following to interpret historical data:

- a. timelines – B.C.E. and B.C.; C.E. and A.D.
- b. graphs, tables, charts, and maps

Describe the difference between primary and secondary sources.

Locate information using both primary and secondary sources.

Describe how archaeological research adds to our understanding of the past.

*Use the following to interpret historical data:*

1. *timelines – B.C.E. and B.C.; C.E. and A.D.*
2. *graphs, tables, charts, and maps*

Construct timelines of the historical era being studied (e.g., presidents/ world leaders, key events, people).

Construct charts, graphs, and narratives using historical data.

Interpret historical data displayed in graphs, tables, and charts.

Formulate questions that can be answered by historical study and research.

Determine the credibility and bias of primary and secondary sources.

Analyze cause and effect relationships between and among individuals and/or historical events.

Recognize the change of governance of the Southwest from Spain to Mexico as a result of the Mexican Revolution.

Describe the influence of American explorers and trappers (e.g., James O. Pattie, Kit Carson, Bill Williams) on the development of the Southwest.

Describe events that led to Arizona becoming a possession of the United States:

- a. Mexican – American War
- b. Mexican Cession (Treaty of Guadalupe-Hidalgo)
- c. Gadsden Purchase

Describe the impact of Native Americans, Hispanics, and newcomers from the United States and the world on the culture of Arizona (e.g., art, language, architecture, mining, ranching).

Describe the conflict of cultures that occurred between newcomers and Arizona Native Americans:

- a. Indian Wars
- b. Navajo Long Walk
- c. formation of reservations

Describe the following events of 19th century presidencies of:

- c. Thomas Jefferson – Louisiana Purchase; explorations of Lewis and Clark
- d. James Madison – War of 1812
- e. James Monroe – The Monroe Doctrine
- f. Andrew Jackson – Nationalism and Sectionalism; Trail of Tears
- g. James Polk – Mexican-American War; discovery of gold in California

Describe the different perspectives (e.g., Native Americans, settlers, Spanish, the U.S. government, prospectors) of Manifest Destiny.

Identify major westward migration routes of the 19th Century.

and other innovations of the Industrial Revolution contributed to U.S. growth and expansion.

Describe the following

individuals' role in the reform movement before the Civil War:

- a. Frederick Douglass
- b. Harriet Tubman
- c. William Lloyd Garrison
- d. Sojourner Truth

Describe elements of culture of a community or nation (e.g., food, clothing, housing, sports, customs, beliefs) in areas studied.

*Discuss the major economic activities and land use (e.g., harvesting natural resources, agricultural, industrial, residential, commercial, recreational) of areas studied.*

Describe the major economic activities and land use patterns (e.g., agricultural, industrial, residential, commercial, recreational, harvesting of natural resources) of regions studied.

Describe elements of culture in areas studied (e.g., Mexico, Central and South America).

Identify how factors such as river/coastal civilizations and trade influenced the location, distribution, and interrelationships of economic activities over time and in different regions.

Identify cultural norms that influence different social, political, and economic activities of men and women.

Explain why and how boundaries change (e.g., Westward Expansion, Mexican - American War).

Explain the effects (e.g., economic, cultural, environmental, political) of human migration on places.

Describe the environmental, economic, cultural, and political effects of human migrations and cultural diffusion on places and regions.

Analyze the causes and effects of settlement patterns.

Describe the impact of geographic features (e.g., rivers, mountains, resources, deserts, climate) on migration and the location of human activities (e.g., exploration, mining, transportation routes, settlement patterns).

Describe how geographic features influenced events in the past in the Great Plains, the Pacific Northwest and the West.

Describe ways geographic features and conditions influenced settlement in various locations (e.g., near waterways, on high terrain, with adequate fresh water, on good land for farming, in temperate climates) throughout different periods of time, places, and regions.

## **Eastern Religions / Celebrations (November 27-Dec. 1)**

Discuss the food, clothing, housing, recreation, and celebrations practiced by cultural groups in the local community.

Describe the religious traditions that helped shape the culture of the following ancient civilizations:

- Sumeria, India (i.e., polytheism)
- Egypt (i.e., belief in an afterlife)
- China (i.e., ancestor worship)

Describe aspects (e.g., geographic origins, founders and their teachings, traditions, customs, beliefs) of Hinduism, Buddhism

Explain why places and regions serve as cultural symbols such as Jerusalem being a sacred place for Jews, Christians, and Muslims.

## **December 4-21: Theater & Winter Performance**

*No Arizona Social Studies or Science standards for this topic. Teacher may refer to Arizona's suggested Theater standards for guidance.*

## **January 8-12: School Olympics & Health**

*No Arizona Social Studies or Science standards for this topic. Teacher may refer to suggested Arizona Physical Education and Health standards for guidance.*

## **Biographies & Careers (January 16- Feb. 2)**

Identify areas of interest (e.g., personal, career)

Evaluate individual skills

Evaluate a variety of potential career choices

### **Demonstrate work ethics and behaviors for success as defined by school and community**

Identify characteristics of work ethics and behavior as defined by school and

community

Demonstrate identified work ethics and behaviors in your school and community

### **Demonstrate the connection between academic skills and career pathways by identifying required education and training to achieve career choice(s)**

Identify academic preparation necessary for a variety of careers

### **Identify careers which capitalize on individual strengths and interests**

Identify areas of interest (e.g., personal, career)

Evaluate individual skills

Evaluate a variety of potential career choices

### **Apply the basic academic skills to develop a resume, job application and interviewing techniques**

Develop a resume

Complete a job application

Participate in the interview process

Explain how scientific knowledge, skills, and technological capabilities are integral to a variety of careers

## **Scientific Method and Energy & Magnetism** **(February 5-21)**

Formulate relevant questions about the properties of objects, organisms, and events of the environment using observations and prior knowledge.

Predict the results of an investigation based on observed patterns, not random guessing.

Differentiate inferences from observations.

Formulate a relevant question through observations that can be tested by an investigation.

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

Locate information (e.g., book, article, website) related to an investigation.

Differentiate among a question, hypothesis, and prediction.

Formulate questions based on observations that lead to the development of a hypothesis.

Locate research information, not limited to a single source, for use in the design of a controlled investigation.

Participate in planning and conducting investigations, and recording data.

*Demonstrate safe behavior and appropriate procedures (e.g., use of instruments, materials, organisms) in all science inquiry.*

Plan a simple investigation (e.g., one plant receives adequate water, one receives too much water, and one receives too little water) based on the formulated questions.

Conduct simple investigations (e.g., related to plant life cycles, changing the pitch of a sound, properties of rocks) in life, physical, and Earth and space sciences.

Use metric and U.S. customary units to measure objects.

Record data in an organized and appropriate format (e.g., t-chart, table, list, written log).

Plan a simple investigation that identifies the variables to be controlled.

Conduct controlled investigations (e.g., related to erosion, plant life cycles, weather, magnetism) in life, physical, and Earth and space sciences.

Measure using appropriate tools (e.g., ruler, scale, balance) and units of measure (i.e., metric, U.S. customary).

Conduct simple investigations (e.g., related to forces and motion, Earth processes) based on student-developed questions in life, physical, and Earth and space sciences.

Design an investigation to test individual variables using scientific processes.

Conduct a controlled investigation using scientific processes.

Perform measurements using appropriate scientific tools (e.g., balances, microscopes, probes, micrometers)

Keep a record of observations, notes, sketches, questions, and ideas using tools such as written and/or computer logs.

Organize and analyze data; compare to predictions.

Organize data using the following methods with appropriate labels:

- bar graphs
- pictographs
- tally charts

Construct reasonable interpretations of the collected data based on formulated questions.

*Compare the results of the investigation to predictions made prior to the investigation.*

*Generate questions for possible future investigations based on the conclusions of the investigation.*

Record questions for further inquiry based on the conclusions of the investigation.

Analyze data obtained in a scientific investigation to identify trends.

Formulate conclusions based upon identified trends in data.

Determine that data collected is consistent with the formulated question.

Determine whether the data supports the prediction for an investigation.

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

Analyze data obtained in a scientific investigation to identify trends and form conclusions.

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

Evaluate the reasonableness of the outcome of an investigation.

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

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

Analyze data obtained in a scientific investigation to identify trends.

Form a logical argument about a correlation between variables or sequence of events (e.g., construct a cause-and-effect chain that explains a sequence of events).

Evaluate the observations and data reported by others.

Interpret simple tables and graphs produced by others.

Analyze the results from previous and/or similar investigations to verify the results of the current investigation.

Formulate new questions based on the results of a completed investigation.

Communicate investigations and explanations using evidence and appropriate terminology.

Describe an investigation in ways that enable others to repeat it.

*Communicate with other groups to describe the results of an investigation.*

Communicate verbally or in writing the results of an inquiry.

Choose an appropriate graphic representation for collected data:

bar graph

line graph

Venn diagram model

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

Choose an appropriate graphic representation for collected data:

· line graph

· double bar graph

· stem and leaf plot

· histogram

Display data collected from a controlled investigation.

Communicate the results of an investigation with appropriate use of qualitative and quantitative information.

Create a list of instructions that others can follow in carrying out a procedure (without the use of personal pronouns).

Communicate the results and conclusion of the investigation.

Scientific investigation grows from the contributions of many people.

History and Nature of Science emphasizes the importance of the inclusion of historical perspectives and the advances that each new

development brings to technology and human knowledge. This strand focuses on the human aspects of science and the role that scientists play in the development of various cultures.

Identify individual and cultural contributions to scientific knowledge.

*Identify how diverse people and/or cultures, past and present, have made important contributions to scientific innovations (e.g., John Muir [naturalist], supports Strand 4; Thomas Edison [inventor], supports Strand 5; Mae Jemison [engineer, physician, astronaut], supports Strand 6;; Edmund Halley [scientist], supports Strand 6).*

*(e.g., Margaret Mead [anthropologist], supports Strand 4; Nikola Tesla [engineer, inventor] supports Strand 5; Michael Faraday [scientist], supports Strand 5; Benjamin Franklin [scientist*

*(e.g., Percy Lavon Julian [scientist], supports Strand 4; Niels Bohr [scientist], supports Strand 5; Edwin Hubble [scientist], supports Strand 6).*

*(e.g., Jacques Cousteau [inventor, marine explorer], supports Strand 4; William Beebe [scientist], supports Strand 4; Thor Heyerdahl [anthropologist], supports Strand 6).*

Describe science-related career opportunities.

Describe how a major milestone in science or technology has revolutionized the thinking of the time (e.g., Cell Theory, sonar, SCUBA, underwater robotics).

Analyze the impact of a major scientific development occurring within the past decade.

Describe the use of technology in science-related careers.

Understand how science is a process for generating knowledge.

Describe how, in a system (e.g., terrarium, house) with many components, the components usually influence one another.

Explain why a system may not work if a component is defective or missing.

Explain the role of experimentation in scientific inquiry.

Describe the interaction of components in a system (e.g., flashlight, radio).

Explain various ways scientists generate ideas (e.g., observation, experiment, collaboration, theoretical and mathematical models).

Provide examples that support the premise that science is an ongoing process that changes in response to new information and discoveries (e.g., space exploration, medical advances).

Explain the cycle by which new scientific knowledge generates new scientific inquiry.

Describe how scientific knowledge is subject to modification and/or change as new information/technology challenges prevailing theories.

Compare collaborative approaches that scientists use for investigations (e.g., teams, individual with peer review).

Describe qualities of the scientists' habits of mind (e.g., openness, skepticism, integrity, tolerance).

Describe how science is an ongoing process that changes in response to new information and discoveries.

Describe how scientific knowledge is subject to change as new information and/or technology challenges prevailing theories.

Apply the following scientific processes to other problem solving or decision making situations:

Communicating, comparing, measuring classifying predicting  
organizing data, inferring, generating hypotheses identifying variables

Describe the development of different technologies (e.g., communication, entertainment, transportation, medicine) in response to resources, needs, and values.

Design and construct a technological solution to a common problem or need using common materials.

Describe how science and technology (e.g., computers, air conditioning, medicine) have improved the lives of many people.

Describe benefits (e.g., easy communications, rapid transportation) and risks (e.g., pollution, destruction of natural resources) related to the use of technology.

Describe the relationship between science and technology.

Propose viable methods of responding to an identified need or problem.

Compare possible solutions to best address an identified need or problem.

Describe a technological discovery that influences science.

## **Scientific Method and Energy & Magnetism** **(February 5-21)**

Investigate different forms of energy.

Demonstrate that light can be:

- · reflected (with mirrors)
- · refracted (with prisms)
- · absorbed (by dark surfaces)

Describe how light behaves on striking objects that are:

- · transparent (clear plastic)
- · translucent (waxed paper)
- · opaque (cardboard)

Demonstrate that vibrating objects produce sound.

Demonstrate that the pitch of a sound depends on the rate of the vibration (e.g., a long rubber band has a lower pitch than a short rubber band).

Demonstrate that electricity flowing in circuits can produce light, heat, sound, and magnetic effects.

Construct series and parallel electric circuits.

Explain the purpose of conductors and insulators in various practical applications.

Investigate the characteristics of magnets (e.g., opposite poles attract, like poles repel, the force between two magnet poles depends on the distance between them).

State cause and effect relationships between magnets and circuitry.

Identify various ways in which electrical energy is generated using renewable and nonrenewable resources (e.g., wind, dams, fossil fuels, nuclear reactions).

Identify several ways in which energy may be stored.

Compare the following ways in which energy may be transformed:

- · mechanical to electrical
- · electrical to thermal

Explain how thermal energy (heat energy) can be transferred by:

- conduction
- convection
- radiation

## **Ecology (February 26-March 2)**

Describe the beneficial and harmful impacts of natural events and human activities on the environment (e.g., forest fires, flooding, pesticides).

Describe the interactions between human populations, natural hazards, and the environment.

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

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).

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

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

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

Understand the impact of technology.

Identify ways that people use tools and techniques to solve problems.

Describe benefits (e.g., easy communications, rapid transportation) and risks (e.g., pollution, destruction of natural resources) related to the use of technology.

Propose viable methods of responding to an identified need or problem.

Compare possible solutions to best address an identified need or problem.

Differentiate renewable resources from nonrenewable resources.

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

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

Describe how the following environmental conditions affect the quality of life: water quality, climate, population density, smog

Identify various ways in which electrical energy is generated using renewable and nonrenewable resources (e.g., wind, dams, fossil fuels, nuclear reactions)

Describe ways humans use Earth materials (e.g., fuel, building materials, growing food).

*Identify ways (e.g., farming, building structures and dams, creating transportation routes, overgrazing, mining, logging) in which humans depend upon, adapt to, and impact the earth.*

Describe ways of protecting natural resources.

Identify resources that are renewable, recyclable, and non-renewable.

Describe human dependence on the physical environment and natural resources to satisfy basic needs.

Describe ways that human dependence on natural resources influences economic development, settlement, trade, and migration.

Describe the intended and unintended consequences of human modification (e.g., irrigation, aqueducts, canals) on the environment.

Explain how changes in the natural environment (e.g., flooding of the Nile) can increase or diminish its capacity to support human activities.

Use geography concepts and skills (e.g., recognizing patterns, mapping, graphing) to find solutions for local, state or national problems (e.g., shortage or abundance of natural resources).

# **March 16- 25-16 Celebrating Diversity / Civil War & Reconstruction**

*Retell stories to describe past events, people and places.*

Use the following to interpret historical data:

- a. timelines – B.C.E. and B.C.; C.E. and A.D.
- b. graphs, tables, charts, and maps

Locate information using both primary and secondary sources.

Construct timelines of the historical era being studied (e.g., presidents/ world leaders, key events, people).

Construct charts, graphs, and narratives using historical data.

Formulate questions that can be answered by historical study and research.

Determine the credibility and bias of primary and secondary sources.

Analyze cause and effect relationships between and among individuals and/or historical events.

Recognize that there were issues (e.g., slavery, states' rights, South seceded from the Union) associated with the Civil War.

Discuss contributions of people (e.g., Abraham Lincoln, Jefferson Davis, Robert E. Lee, Ulysses S. Grant, Harriet Tubman, Sojourner Truth, Frederick Douglass) during the Civil War era.

Describe events in Arizona during the Civil War:

- Battle of Picacho Peak
- Battle of Apache Pass
- Arizona becomes a territory

Describe factors leading to the Civil War:

- role of abolitionists and Underground Railroad
- sectionalism between North and South
- westward expansion

Identify the reasons why the following were important events of the Civil War:

- firing on Ft. Sumter
- major battles
- delivery of the Emancipation Proclamation
- surrender at Appomattox

Describe how the following regions exemplify the concept of region as an area with unifying human or natural factors: North and South during the Civil War

Describe elements of culture of a community or nation (e.g., food, clothing, housing, sports, customs, beliefs) in areas studied.

*Discuss the major economic activities and land use (e.g., harvesting natural resources, agricultural, industrial, residential, commercial, recreational) of areas studied.*

Describe the major economic activities and land use patterns (e.g., agricultural, industrial, residential, commercial, recreational, harvesting of natural resources) of regions studied.

Describe elements of culture in areas studied (e.g., Mexico, Central and South America).

Identify how factors such as river/coastal civilizations and trade influenced the location, distribution, and interrelationships of economic activities over time and in different regions.

Identify cultural norms that influence different social, political, and economic activities of men and women.

Explain why and how boundaries change (e.g., Civil War,).

Explain the effects (e.g., economic, cultural, environmental, political) of human migration on places.

Describe how specialization (e.g., division of labor) improved standards of living in the Pre-Civil War North and South.

Interpret how trade promoted economic growth throughout U.S. history.

Explain how price incentives affect peoples' behavior and choices, such as colonial decisions about what crops to grow and which products to produce.

## **Ocean & School Dance & Luau (March 19-23)**

Describe the composition and interactions between the structure of the Earth and its atmosphere.

Explain the composition, properties, and structures of the oceans' zones and layers.

Describe ways scientists explore the Earth's atmosphere and bodies of water.

Describe how currents and wind cause erosion and land changes.

Describe the role that water plays in the following processes that alter the Earth's surface features: erosion deposition weathering

Understand the processes acting on the Earth and their interaction with the Earth systems.

Explain how water is cycled in nature.

## **April 3-20: Movies and Media** **SEE TECHNOLOGY STANDARDS**

***No Arizona Social Studies or Science standards for this topic.***

***Teacher may refer to suggested Arizona Technology and Media Arts standards for guidance.***

## **Ancient India / Asian Culture (April 16- May 4)**

Locate major physical and human features from content studied (e.g., Greece, Canada, Spain, United States) on maps and globes.

Describe how physical and human characteristics of places change from past to present.

*Retell stories to describe past events, people and places*

Use the following to interpret historical data:

- timelines – B.C.E. and B.C.; C.E. and A.D.
- graphs, tables, charts, and maps

Locate information using both primary and secondary sources.

Construct timelines of the historical era being studied (e.g., presidents/world leaders, key events, people).

Construct charts, graphs, and narratives using historical data.

Interpret historical data displayed in graphs, tables, and charts.

Formulate questions that can be answered by historical study and research.

Determine the credibility and bias of primary and secondary sources.

Analyze cause and effect relationships between and among individuals and/or historical events.

Describe the lifestyles of humans in the Paleolithic and Neolithic Ages.

Determine how the following factors influenced groups of people to develop into civilizations in India,:

- farming methods
- domestication of animals
- division of labor
- geographic factors

Describe the importance of the following river valleys in the development of ancient civilizations: Indus- India

Describe the religious traditions that helped shape the culture of the following ancient civilizations: Sumeria, India (i.e., polytheism)

Describe scientific and cultural advancements (e.g., networks of roads, aqueducts, art and architecture, literature and theatre, mathematics, philosophy) in ancient civilizations.

Describe elements of culture of a community or nation (e.g., food, clothing, housing, sports, customs, beliefs) in areas studied.

Discuss that Ancient Civilizations have changed from past to present.

*Discuss the major economic activities and land use (e.g., harvesting natural resources, agricultural, industrial, residential, commercial, recreational) of areas studied.*

Describe the major economic activities and land use patterns (e.g., agricultural, industrial, residential, commercial, recreational, harvesting of natural resources) of regions studied.

. Describe elements of culture in areas studied (e.g., Mexico, Central and South America).

Identify how factors such as river/coastal civilizations and trade influenced the location, distribution, and interrelationships of economic activities over time and in different regions.

Identify cultural norms that influence different social, political, and economic activities of men and women.

## **Creepy Crawlies (May 7-11)**

Identify plant and animal adaptations.

Identify adaptations of plants and animals that allow them to live in specific environments.

Give examples of adaptations that allow plants and animals to survive.

- camouflage – horned lizards, coyotes
- mimicry – Monarch and Viceroy butterflies
- physical – cactus spines
- mutualism – species of acacia that harbor ants, which repel other harmful insects

## **Ancient Egypt (May 14-24)**

Locate major physical and human features from content studied (e.g., Greece, Canada, Spain, United States) on maps and globes.

Describe how physical and human characteristics of places change from past to present.

Use timelines to identify the time sequence of historical data.

*Recognize how archaeological research adds to our understanding of the past.*

*Use primary source materials (e.g., photos, artifacts, interviews, documents, maps) and secondary source materials (e.g., encyclopedias, biographies) to study people and events from the past.*

*Retell stories to describe past events, people and places*

Use the following to interpret historical data:

- timelines – B.C.E. and B.C.; C.E. and A.D.
- graphs, tables, charts, and maps

Describe the difference between primary and secondary sources.

Locate information using both primary and secondary sources.

Describe how archaeological research adds to our understanding of the past.

Construct timelines of the historical era being studied (e.g., presidents/ world leaders, key events, people).

Construct charts, graphs, and narratives using historical data.

Interpret historical data displayed in graphs, tables, and charts.

Formulate questions that can be answered by historical study and research.

Determine the credibility and bias of primary and secondary sources.

Analyze cause and effect relationships between and among individuals and/or historical events.

Describe the lifestyles of humans in the Paleolithic and Neolithic Ages.

Determine how the following factors influenced groups of people to develop into civilizations in Egypt,

- farming methods
- domestication of animals
- division of labor
- geographic factors

Describe the importance of the following river valleys in the development of ancient civilizations: Nile - Egypt

Compare the forms of government of the following ancient civilizations: Egypt – theocracy

Describe the religious traditions that helped shape the culture of the following ancient civilizations: Egypt (i.e., belief in an afterlife)

Analyze the impact of cultural and scientific contributions of ancient civilizations on later civilizations: Egypt (i.e., mummification, hieroglyphs, papyrus)

Describe scientific and cultural advancements (e.g., networks of roads, aqueducts, art and architecture, literature and theatre, mathematics, philosophy) in ancient civilizations.

Identify the roles and contributions of individuals in the following ancient civilizations: Egypt (i.e., Hatshepsut, Ramses, Cleopatra)

Identify regions studied in Strand 2 using a variety of criteria (e.g., climate, landforms, culture, vegetation).

Describe the factors that cause regions and places to change.

Describe the interactions of people in different places and regions.

Describe elements of culture of a community or nation (e.g., food, clothing, housing, sports, customs, beliefs) in areas studied.

Discuss that Ancient Civilizations have changed from past to present.

*Discuss the major economic activities and land use (e.g., harvesting natural resources, agricultural, industrial, residential, commercial, recreational) of areas studied.*

Describe the major economic activities and land use patterns (e.g., agricultural, industrial, residential, commercial, recreational, harvesting of natural resources) of regions studied.

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