

*Older Class*

*Unit Topic  
Standards*

*2016-17*



(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 22-26 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).

## **August 29- September 2: Arizona Geography and Landmarks**

- Locate physical and human features in Arizona using maps, illustrations, or images:
  - a. physical (e.g., Grand Canyon, Mogollon Rim, Colorado River, Gila River, Salt River)
  - b. human (e.g., Phoenix, Yuma, Flagstaff, Tucson, Prescott, Hoover Dam, Roosevelt Dam)
- Describe how the Southwest has distinct physical and cultural characteristics.
- Describe ways in which Arizona has changed over time from statehood to today.
- Locate the landform regions of Arizona (plateau, mountain, desert) on a map.
- Compare the landform regions of Arizona according to their physical features, plants, and animals.
- Describe how regions and places (e.g., Grand Canyon, Colorado River, Casa Grande Ruin, Canyon de Chelly, Yucatan Peninsula) have distinct characteristics. (Connect to content studied.)

## **September 6-16: Ecosystems & Rainforest**

- 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, and nucleus
- Describe the function of each of the following cell parts: cell wall, cell membrane and 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

## **September 19-30: Native Americans**

- *Recognize and describe how archaeological research adds to our understanding of the past.*
- 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
- Use timelines to identify the time sequence of historical data.
- Construct timelines of the historical era being studied (e.g., presidents/world leaders, key events, people).
- Describe the difference between primary and secondary sources.
- Locate information using both primary and secondary sources.
- *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.*
- Determine the credibility and bias of primary and secondary sources.
- *Retell stories to describe past events, people and places.*
- 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.
- Analyze cause and effect relationships between and among individuals and/or historical events.

### **Early Civilizations**

- 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 legacy and cultures of prehistoric people in the Americas:
  - a. characteristics of hunter-gatherer societies
  - b. 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 Adena, Hopewell, and Mississippian mound-building cultures:
  - a. location, agriculture, housing, arts, and trade networks
  - b. how these cultures adapted to and altered their environment

### **Exploration and Colonization**

- Recognize that Native American tribes resided throughout North America before the period of European exploration and colonization.

### **Human Systems**

- 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.*
- 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.

### **Environment and Society**

**PO 1.** Describe the ways European colonists and Native Americans viewed, adapted, and used the environment.

### **Geographic Applications**

- 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 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.

## **October 3-7: Economics**

***(Note: This year we will focus on personal finance. Not all of the standards below will be addressed this year)***

### **Foundations of Economics**

- Identify how scarcity requires people to make choices due to their unlimited wants and needs.
- Identify how limited resources and unlimited human wants cause people to choose some things and give up others.
- Identify opportunity costs in personal decision-making situations.
- Explain the decision for a personal spending choice.
- 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.
- 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).
- 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.

### **Microeconomics**

- 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.

### **Personal Finance**

- 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:
  - a. cash
  - b. check
  - c. money order
  - d. debit card
  - e. 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

# October 10-21: Middle Ages

## Places and Regions

- 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.
- Identify regions studied 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.

## Research Skills for History

- 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*

## Research Skills for History

- 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
- Construct timelines of the historical era being studied (e.g., presidents/world leaders, key events, people).
- Describe the difference between primary and secondary sources.
- Locate information using both primary and secondary sources.
- Determine the credibility and bias of primary and secondary sources.
- Describe how archaeological research adds to our understanding of the past.
- 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.
- Analyze cause and effect relationships between and among individuals and/or historical events.

## World in Transition

- Discuss life in Europe as it existed at the time of the Aztec and Incan/Inkan empires in the Americas:
  - a. life in castles

- b. knights traveling to new places during the Crusades
  - c. desire for new routes to the Indies
- Describe aspects (e.g., geographic origins, founders and their teachings, traditions, customs, beliefs)
- Describe the development of the Medieval kingdoms of Ghana, Mali, and Songhai:
  - Islamic influences
  - mining of gold and salt
  - centers of commerce
- Describe the culture and way of life of the Arab Empire:
  - Islam (i.e., Mohammad, Mecca)
  - extensive trade and banking network
  - interest in science (i.e. medicine, astronomy)
  - translation and preservation of Greek and Roman literature
- Describe the Catholic Church's role in the following activities during the Middle Ages: Crusades, Inquisition, education, government, spread of Christianity
- Describe the transition from feudalism to nationalism at the end of the Middle Ages.
- Describe the trade routes that established the exchange of goods (e.g., silk, salt, spices, gold) between eastern and western civilizations during the 15th and 16th centuries.
- Describe how trade routes led to the exchange of ideas (e.g., religion, scientific advances, literature) between Europe, Asia, Africa and the Middle East during the 15th and 16th centuries.

### **Human Systems**

- 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.*
- 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.

# **October 24- November 4: Civics and Government**

## **Foundations of Government**

- Recognize that people in the United States have varied backgrounds but may share principles, goals, customs and traditions.
- Describe how people in the community and state work together to achieve common goals.
- Identify the rights 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.....)
- Describe the varied backgrounds of people living in Arizona:
  - a. shared principles, goals, customs and traditions
  - b. diversity in one's school and community
  - c. benefits and challenges of a diverse population.
- Identify the democratic principles and ideals associated with the following documents:
  - a. Mayflower Compact
  - b. Declaration of Independence
  - c. Articles of Confederation
  - d. United States Constitution
  - e. Bill of Rights

## **Structure of Government**

- Discuss the three branches of state and national government:
  - a. Executive
  - b. Legislative
  - c. Judicial
- Recognize that there are different levels of government (e.g., local, tribal, county, state, national).
- Describe different levels of government (e.g., local, tribal, state, national).
- Describe how the Constitution is designed to limit central government, as in freedom from a controlling monarchy.

## **Functions of Government**

- Identify the basic concept of how laws are made (e.g., law proposed, discussed, amended, voted on).
- Describe the responsibilities of state government (e.g., making laws,

enforcing laws, collecting taxes).

- Describe the responsibilities (e.g., determining land use, enforcing laws, overlapping responsibilities with state government) of the local government.
- Describe the possible consequences of violating laws.
- Explain ways in which the powers of the federal government differed from the Articles of Confederation to the Constitution.
- Identify the process by which a bill becomes a law.
- Describe how the checks and balance system which established the three branches of the federal government works, as in Andrew Johnson's impeachment.
- Explain the significance of the Dred Scott Decision.
- Compare the arguments for states' rights versus the power of the federal government (e.g., the expansion of slavery, taxation).

### **Government Systems of the World**

- Describe the characteristics of a monarchy and a republic.
- Describe the structure of the following governments:
  - a. theocracy
  - b dictatorship
  - c. republic
  - d. monarchy
  - e. democracy
  - f. anarchy

### **Human Systems**

- Recognize there are differences in political units and hierarchies (i.e., community, city, county, state, country, continent).

# November 7-18: Space

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

## Earth's Processes and Systems

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

- Describe how the Moon's appearance changes during a four-week lunar cycle.
- Describe how Earth's rotation results in day and night at any particular location.
- Distinguish between revolution and rotation.
- Describe the role of gravity as an attractive force between celestial objects.

## Earth in the Solar System

- Understand the relationships of the Earth and other objects in the solar system.
- Identify the known planets of the solar system.
- Describe the distinguishing characteristics of the known planets in the solar system.
- Describe various objects in the sky (e.g., asteroids, comets, stars, meteors/shooting stars).
- Describe the change in position and motion of the following objects in the sky over time:
  - real motion – Moon, planets
  - apparent motion (due to the motion of the Earth) – Sun, Moon, stars
- Explain the apparent motion of the Sun and stars.
- Describe efforts to explore space (e.g., Apollo missions, space shuttles, Hubble space telescope, space probes).

## **November 28 -December 2: Western Religions OR Celebrations**

- Describe the religious traditions that helped shape the culture of the following ancient civilizations: Middle East (i.e., monotheism)
- Describe aspects (e.g., geographic origins, founders and their teachings, traditions, customs, beliefs) Judaism, Christianity, and Islam.
- Explain why places and regions serve as cultural symbols such as Jerusalem being a sacred place for Jews, Christians, and Muslims.

## **December 5-22: Theater & Winter Performance**

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

## **January 6-10: Sportsmanship, Health & School Olympics**

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

## **January 17-27: Biographies**

**Refer to ELA standards for more information on informational text and writing standards.**

# **January 30- February 3: Careers and Workplace Skills**

***(Note: Teacher may refer to the Workplace Standards below.)***

## **Evaluate areas of interest and/or potential career choices 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

## **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.

## **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.



## **February 6-10: Scientific Method**

### **Observe, ask questions, and make predictions.**

- 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.

### **Scientific Testing (Investigating and Modeling)**

- 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. Plan a simple investigation that identifies the variables to be controlled. Design an investigation to test individual variables using scientific processes.
- 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. Conduct simple investigations based on student-developed questions in life, physical, and Earth and space sciences. Conduct a controlled investigation using scientific processes. Conduct controlled investigations (e.g., related to erosion, plant life cycles, weather, magnetism) in life, physical, and Earth and space sciences.
- Perform measurements using appropriate scientific tools (e.g., balances, microscopes, probes, micrometers)

- Use metric and U.S. customary units to measure objects. Measure using appropriate tools (e.g., ruler, scale, balance) and units of measure (i.e., metric, U.S. customary).
- Keep a record of observations, notes, sketches, questions, and ideas using tools such as written and/or computer logs. Record data in an organized and appropriate format (e.g., t-chart, table, list, written log).

### **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 and form conclusions.
- 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.
- Evaluate the reasonableness of the outcome of an investigation.
- Analyze whether the data is consistent with the proposed explanation that motivated the investigation.
- Develop new questions and predictions based upon the data collected in the 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).
- 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.

### **Communicate results of investigations.**

- Communicate verbally or in writing the results of an inquiry. Communicate investigations and explanations using evidence and appropriate terminology.
- *Communicate with other groups to describe the results of an investigation.*
- Describe an investigation in ways that enable others to repeat it.
- Choose an appropriate graphic representation for collected data:
  - bar graph
  - line graph
  - Venn diagram
  - model
  - 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.

### **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], Thomas Edison [inventor], Mae Jemison [engineer, physician, astronaut], Edmund Halley, Margaret Mead [anthropologist], Nikola Tesla [engineer, inventor] Michael Faraday [scientist], Benjamin Franklin [scientist] Percy Lavon Julian [scientist], Niels Bohr [scientist], Edwin Hubble [scientist], Jacques Cousteau [inventor, marine explorer]; William Beebe [scientist], Thor Heyerdahl [anthropologist])*
- 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.
- Apply the following scientific processes to other problem solving or decision making situations: Observing, questioning, 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.

## ***February 13-22: Matter and Chemistry***

### **Understand physical and chemical properties of matter.**

- Identify that matter is made of smaller units called:
  - molecules (e.g., H<sub>2</sub>O, CO<sub>2</sub>)
  - atoms (e.g., H, N, Na)
- Distinguish between mixtures and compounds.
- Describe changes of matter:
  - physical – cutting wood, ripping paper, freezing water
  - chemical – burning of wood, rusting of iron, milk turning sour

## **February 27- March 3: Ecology**

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

**Changes in Environments-** 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.

**Science and Technology in Society-** 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.

### **Environment and Society**

- *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.

### **Geographic Applications .**

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 6-17: Explorers

## Research Skills for History

- *Recognize and describe how archaeological research adds to our understanding of the past.*
- 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
- Use timelines to identify the time sequence of historical data.
- Construct timelines of the historical era being studied (e.g., presidents/world leaders, key events, people).
- Describe the difference between primary and secondary sources.
- Locate information using both primary and secondary sources.
- *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.*
- Determine the credibility and bias of primary and secondary sources.
- *Retell stories to describe past events, people and places.*
- 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.
- Analyze cause and effect relationships between and among individuals and/or historical events.

## Exploration and Colonization

- Discuss technological advances (e.g., compass, printing press) that facilitated exploration of the New World.
- Recognize that European countries explored the New World for economic and political reasons.
- Discuss European explorers (e.g., Samuel Champlain, Henry Hudson, John Cabot, Jacques Cartier, Ponce de Leon, Hernan de Soto) and their discoveries in the New World.
- Recognize how European exploration affected Native Americans in the Eastern regions (e.g., way of life, loss of land).
- Describe the reasons for early Spanish exploration of Mexico and the Southwestern region of the United States by:
  - a. Cabeza de Vaca
  - b. Estevan



- c. Fray Marcos de Niza
- d. Francisco Vásques de Coronado

- Recognize that Native American tribes resided throughout North America before the period of European exploration and colonization.
- Explain the reasons for the explorations of Samuel Champlain, Henry Hudson, John Cabot, Jacques Cartier, Ponce de Leon, and Hernan de Soto in the New World.

### **Encounters and Exchange**

- Describe how the search for a Northwest Passage to Asia led to the exploration and settlement of Canada.
- Discuss European global explorations (e.g., Columbus, Magellan, Henry Hudson, Vasco da Gama, Balboa).
- Describe the reasons (e.g., trade routes, gold) for Spanish and Portuguese explorations of the Americas.
- Describe the impact of European explorers' encounters with the Aztec and Inca/Inka.
- Describe the following effects of European exploration, trade, and colonization on other parts of the world:
  - a. sea routes to Asia
  - b. colonies established and settled
  - c. increased power of European countries
  - d. trade established between Europe, Africa, and Americas
  - e. introduction of disease and the resulting population decline of Indigenous people
  - f. triangular trade
- Describe ways in which Spain, France, and England competed for power:

### **Human Systems**

- Explain why and how boundaries change
- Explain the effects (e.g., economic, cultural, environmental, political) of human migration on places.

### **Foundations of Economics**

- Identify the opportunity costs (i.e., separation from family, indentured service) associated with expeditions to the New World.
- Interpret how trade promoted economic growth throughout U.S. history.

## **March 20-24: School Dance**

*There are no Arizona Social Studies or Science standards for this topic.  
Teacher may refer to Arizona suggested Music and Dance standards for guidance.*

## **March 24- April 4: Renaissance/Reformation Enlightenment**

### **Places and Regions**

- 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.

### **Research Skills for History**

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  - b. graphs, tables, charts, and maps
- Use timelines to identify the time sequence of historical data.
- Construct timelines of the historical era being studied (e.g., presidents/world leaders, key events, people).
- Describe the difference between primary and secondary sources.
- Locate information using both primary and secondary sources.
- *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.*
- Determine the credibility and bias of primary and secondary sources.
- *Retell stories to describe past events, people and places.*
- 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.
- Analyze cause and effect relationships between and among individuals and/or historical events.

## **Renaissance and Reformation**

- Describe how the Renaissance was a time of renewal and advancement in Europe:
  - rebirth of Greek and Roman ideas new ideas and products as a result of trade
  - the arts
  - science
- Describe the contributions or accomplishments of the following individuals during the Renaissance and Reformation:  
Leonardo da Vinci, Michelangelo, Gutenberg, Martin Luther

## **Encounters and Exchange**

Describe how new ways of thinking in Europe during the Enlightenment fostered the following changes in society:

- Scientific Revolution (i.e., Copernicus, Galileo, Newton)
- natural rights (i.e., life, liberty, property)
- governmental separation of powers vs. monarchy
- religious freedom
- Magna Carta

## **Foundations of Government**

Discuss the important ideas of the Enlightenment Period (e.g., Natural Rights, separation of powers, religious freedom) that fostered the creation of the United States government.

## **Human Systems**

- 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.

## **April 7-25: Technology & Media**

*There are no Arizona Social Studies or Science standards for this topic.  
Teacher may refer to suggested Arizona Technology and Media Arts standards for guidance.*

## **April 24- May 5: Colonialism and Revolution**

### **Research Skills for History**

- *Recognize and describe how archaeological research adds to our understanding of the past.*
- 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
- Use timelines to identify the time sequence of historical data.
- Construct timelines of the historical era being studied (e.g., presidents/world leaders, key events, people).
- Describe the difference between primary and secondary sources.
- Locate information using both primary and secondary sources.
- *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.*
- Determine the credibility and bias of primary and secondary sources.
- *Retell stories to describe past events, people and places.*
- 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.
- Analyze cause and effect relationships between and among individuals and/or historical events.

### **Exploration and Colonization**

- Recognize that Native American tribes resided throughout North America before the period of European exploration and colonization.
- Explain the reasons (e.g., religious freedom, desire for land, economic opportunity, a new life) for colonization of America.
- Describe the contributions of geographic and economic conditions, religion, and colonial systems of government to the development of American democratic practices.

- Describe the geography, cultures, and economics of the Southern, Middle Atlantic, and New England Colonies.
- Identify contributions of individuals (e.g., John Smith, William Penn, Lord Baltimore, Roger Williams, Anne Hutchinson, James Ogelthorpe) who were important to the colonization of America.
- Describe interactions (e.g., agricultural and cultural exchanges, alliances, conflicts) between Native Americans and European settlers.
- Describe the causes and effects of triangular trade.

### **Places and Regions**

Describe how the following regions exemplify the concept of region as an area with unifying human or natural factors: three American colonial regions

#### **Geographic Applications**

- 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 Original Thirteen Colonies
- 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.

#### **Foundations of Economics**

- Identify the opportunity costs (i.e., separation from family, indentured service) associated with expeditions to the New World.
- Describe how specialization (e.g., division of labor) improved standards of living in the three colonial regions.
- Identify how voluntary exchange helps both buyers and sellers as in colonial trade in North America.
- Interpret how trade promoted economic growth throughout U.S. history.

#### **Environment and Society**

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

#### **Microeconomics**

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

## **Revolution and New Nation**

- Describe the significance of the following events leading to the American Revolution
  - a. French and Indian War
  - b. Proclamation of 1763
  - c. Tea Act
  - d. Stamp Act
  - e. Boston Massacre
  - f. Intolerable Acts
- Describe the significance of the following events in the Revolutionary War:
  - a. Declaration of Independence
  - b. the battles of Lexington and Concord, Saratoga
  - c. aid from France
  - d. surrender at Yorktown
- Identify the impact of the following individuals on the Revolutionary War:
  - a. Benjamin Franklin
  - b. Thomas Jefferson
  - c. George Washington
  - d. Patrick Henry
  - e. Thomas Paine
  - f. King George III
- Describe how one nation evolved from thirteen colonies through the following events:
  - a. Constitutional Convention
  - b. George Washington's presidency
  - c. creation of political parties

## **Age of Revolution Connect to similar events around the world.**

- Explain the rationale and characteristics of rebellion.
- Explain the impact that revolution has on a society.
- Compare the causes of the American Revolution to other revolutions around the world (e.g., France, Haiti, Mexico, South America, Russia).
- Compare the outcomes of the American Revolution to those of other revolutions around the world (e.g., France, Haiti, Mexico, South America, Russia).

## **Foundations of Government**

- Identify the democratic principles and ideals associated with the following documents:
  - a. Mayflower Compact

- b. Declaration of Independence
  - c. Articles of Confederation
  - d. United States Constitution
  - e. 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
- Describe the struggle between the Federalists and the Anti-federalists over the ratification of the Constitution and the creation of the Bill of Rights.
- Discuss the important ideas of the Enlightenment Period (e.g., Natural Rights, separation of powers, religious freedom) that fostered the creation of the United States government.
- Describe how the Constitution is designed to limit central government, as in freedom from a controlling monarchy.

### **Human Systems**

- 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.

## **May 8-12: Wetlands /Swamps/ Ponds**

- 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, and nucleus
- Describe the function of each of the following cell parts: cell wall, cell membrane and 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

## **May 15-19: Senses**

- Describe more than one way to communicate with a visually-impaired individual
- Describe more than one way to communicate with a hearing-impaired individual
- Identify the functions and parts of the nervous system:
  - control center – brain
  - relay mechanism – spinal cord
  - transport messages – nerves

## **May 22-26: Build-It Bridges**

***This hands-on topic will touch upon many of the following standards.***

### **Observe, ask questions, and make predictions.**

- 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.

### **Scientific Testing (Investigating and Modeling)**

- 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. Plan a simple investigation that identifies the variables to be controlled. Design an investigation to test individual variables using scientific processes.
- 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. Conduct simple investigations based on student-developed questions in life, physical, and Earth and space sciences. Conduct a controlled investigation using scientific processes. Conduct controlled investigations (e.g., related to erosion, plant life cycles, weather, magnetism) in life, physical, and Earth and space sciences.
- Perform measurements using appropriate scientific tools (e.g., balances, microscopes, probes, micrometers)
- Use metric and U.S. customary units to measure objects. Measure using appropriate tools (e.g., ruler, scale, balance) and units of measure (i.e., metric, U.S. customary).
- Keep a record of observations, notes, sketches, questions, and ideas using tools such as written and/or computer logs. Record data in an organized and appropriate format (e.g., t-chart, table, list, written log).

### **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 and form conclusions.
- 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.
- Evaluate the reasonableness of the outcome of an investigation.
- Analyze whether the data is consistent with the proposed explanation that motivated the investigation.
- Develop new questions and predictions based upon the data collected in the 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).
- 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.

### **Communicate results of investigations.**

- Communicate verbally or in writing the results of an inquiry. Communicate investigations and explanations using evidence and appropriate terminology.
- *Communicate with other groups to describe the results of an investigation.*
- Describe an investigation in ways that enable others to repeat it.
- Choose an appropriate graphic representation for collected data:
  - bar graph
  - line graph
  - Venn diagram
  - model
  - 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.

## **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.
- Apply the following scientific processes to other problem solving or decision making situations: Observing, questioning, 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.

## **GEOGRAPHY- US (Weekly)**

Identify each state on a U.S. map.

### **Places and Regions**

- Locate major physical and human features from content studied on maps and globes.
- Describe how physical and human characteristics of places change from past to present.
- Describe how the following regions exemplify the concept of region as an area with unifying human or natural factors: West, Midwest, Northeast, Southeast, Southwest
- Describe the geographic characteristics of a state in the United States with the assistance of maps, the internet, atlases, and other reference materials.
- Describe the factors that cause regions and places to change.
- Describe the interactions of people in different places and regions.
- Describe the physical and human characteristics of places and regions of a Middle Eastern country studied.