

## Pali Institute: Applicable Standards

**\*\*All Applicable standards are from Science Content Standards for California Public Schools except for Archaeology, which has applicable standards from History-Social Science Content Standards for California Public Schools as well as California visual arts standards.**

### Science Curriculum

#### *Aerodynamics*

##### **Applicable CA 5<sup>th</sup> Grade Standards**

- 6.b: Develop a testable question.
- 6.d: Identify the dependent and controlled variables in an investigation
- 6.e: Identify a single independent variable in a scientific investigation and explain how this variable can be used to collect information to answer a question about the results of the experiment.
- 6.f Select appropriate tools and make quantitative observations.
- 6.h: Draw conclusions from scientific evidence and indicate whether further information is needed to support a specific conclusion.

##### **Applicable CA 6<sup>th</sup> Grade Standards**

- 7.a: Develop a hypothesis.
- 7.b: Select and use appropriate tools and technology to perform tests, collect data, and display data.
- 7.e: Recognize whether evidence is consistent with a proposed explanation.

##### **Applicable CA 7<sup>th</sup> Grade Standards**

- 7.a: a. Select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data.
- 7.c: Communicate the logical connection among hypotheses, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence.

##### **Applicable CA 8<sup>th</sup> Grade Standards**

- 2.a: Students know a force has both direction and magnitude.
- 2.c: Students know when the forces on an object are balanced the motion of the object does not change.
- 2.d: Students know how to identify separately the two or more forces that are acting on a single static object, including gravity, elastic forces due to tension or compression in matter, and friction.
- 2.e: Students know that when the forces on an object are unbalanced, the object will change its velocity (that is, it will speed up, slow down, or change direction).
- 2.f: Students know the greater the mass of an object the more force is needed to achieve the same rate of change in motion.

## ***Animal Survivor***

### **Applicable CA 4<sup>th</sup> Grade Standards**

- 2.a: Students know plants are the primary source of matter and energy entering most food chains.
- 2.b: Students know producers and consumers (herbivores, carnivores, omnivores, and decomposers) are related in food chains and food webs and may compete with each other for resources in an ecosystem.
- 2.c: Students know decomposers, including many fungi, insects, and microorganisms, recycle matter from dead plants and animals.
- 3.a: Students know ecosystems can be characterized by their living and nonliving components.
- 3.b: Students know that in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.

### **Applicable CA 6<sup>th</sup> Grade Standards**

- 5.a: Students know energy entering ecosystems as sunlight, is transferred by producers into chemical energy through photosynthesis and then from organism to organism through food webs.
- 5.b: Students know matter is transferred over time from one organism to others in the food web and between organisms and the physical environment.
- 5.c: Students know populations of organisms can be categorized by the functions they serve in an ecosystem.
- 5.d: Students know different kinds of organisms may play similar ecological roles in similar biomes.
- 5.e: Students know the number and types of organisms an ecosystem can support depends on the resources available and on abiotic factors, such as quantities of light and water, a range of temperatures, and soil composition.

## ***Archaeology***

### **Applicable CA 6<sup>th</sup> Grade Standards**

- 6.1: Students describe what is known through archaeological studies of the early physical and cultural development of humankind from the Paleolithic era to the agricultural revolution.
  - 6.1.1: Describe the hunter-gatherer societies, including the development of tools and the use of fire.
  - 6.1.2: Identify the locations of human communities that populated the major regions of the world and describe how humans adapted to a variety of environments.
  - 6.1.3: Discuss the climatic changes and human modifications of the physical environment that gave rise to the domestication of plants and animals and new sources of clothing and shelter.

### **Applicable CA 6<sup>th</sup> Grade Standards**

1.0: Artistic Perception: Processing, Analyzing, and Responding to Sensory Information Through the Language and Skills Unique to the Visual Arts.

Students perceive and respond to works of art, objects in nature, events, and the environment. They also use the vocabulary of the visual arts to express their observations. They identify and describe all the elements of art found in selected works of art (e.g., color, shape/form, line, texture, space, value). Discuss works of art as to theme, genre, style, idea, and differences in media.

2.0: Creative Expression: Creating, Performing, and Participating in the Visual Arts. Students apply artistic processes and skills, using a variety of media to communicate meaning and intent in original works of art.

2.1: Use various observational drawing skills to depict a variety of subject matter.

2.3: Create a drawing, using varying tints, shades, and intensities. Communication and Expression Through Original Works of Art

2.4: Create increasingly complex original works of art reflecting personal choices and increased technical skill.

2.5: Select specific media and processes to express moods, feelings, themes, or ideas.

3.0: Historical and Cultural Context: Understanding the Historical Contributions and Cultural Dimensions of the Visual Arts. Students analyze the role and development of the visual arts in past and present cultures throughout the world, noting human diversity as it relates to the visual arts and artists.

3.2: View selected works of art from a culture and describe how they have changed or not changed in theme and content over a period of time.

3.3: Compare, in oral or written form, representative images or designs from at least two selected cultures.

### ***Bird Brains***

#### **Applicable CA 6<sup>th</sup> Grade Standards**

5.c: Students know populations of organisms can be categorized by the functions they serve in an ecosystem.

#### **Applicable CA 7<sup>th</sup> Grade Standards**

3.a: Students know both genetic variation and environmental factors are causes of evolution and diversity of organisms.

3.b: Students know the reasoning used by Charles Darwin in reaching his conclusion that natural selection is the mechanism of evolution.

### ***CSI: Pali***

#### **Applicable CA 5<sup>th</sup> Grade Standards**

6.f: Select appropriate tools and make quantitative observations.

6.h: Draw conclusions from scientific evidence and indicate whether further information is needed to support a specific conclusion.

#### **Applicable CA 6<sup>th</sup> Grade Standards**

7.b: Select and use appropriate tools and technology to perform tests, collect data, and display data.

#### **Applicable CA 7<sup>th</sup> Grade Standards**

2.b: Students know sexual reproduction produces offspring that inherit half their genes from each parent.

2.d: Students know plant and animal cells contain many thousands of different genes and typically have two copies of every gene. The two copies (or alleles) of the gene may or may not be identical, and one may be dominant in determining the phenotype while the other is recessive.

2.e: Students know DNA (deoxyribonucleic acid) is the genetic material of living organisms and is located in the chromosomes of each cell

## ***Energy Dilemma***

### **Applicable CA 6<sup>th</sup> Grade Standards**

- 3.b: Students know that when fuel is consumed, most of the energy released becomes heat energy
- 4.a: Students know the sun is the major source of energy for phenomena on Earth's surface; it powers winds, ocean currents, and the water cycle.
- 4.b: Students know solar energy reaches Earth through radiation, mostly in the form of visible light.
- 6.a: Students know the utility of energy sources is determined by factors that are involved in converting these sources to useful forms and the consequences of the conversion process.
- 6.b: Students know different natural energy and material resources, including air, soil, rocks, minerals, petroleum, fresh water, wildlife, and forests, and know how to classify them as renewable or nonrenewable.

## ***Fresh Water Biology***

### **Applicable CA 5<sup>th</sup> Grade Standards**

- 3.a: Students know most of Earth's water is present as salt water in the oceans, which cover most of Earth's surface.
- 3.b: Students know when liquid water evaporates, it turns into water vapor in the air and can reappear as a liquid when cooled or as a solid if cooled below the freezing point of water.
- 3.d: Students know that the amount of fresh water located in rivers, lakes, underground sources, and glaciers is limited and that its availability can be extended by recycling and decreasing the use of water.
- 3.e: Students know the origin of the water used by their local communities

### **Applicable CA 6<sup>th</sup> Grade Standards**

- 5.d: Students know different kinds of organisms may play similar ecological roles in similar biomes.
- 6.e: Students know the number and types of organisms an ecosystem can support depends on the resources available and on abiotic factors, such as quantities of light and water, a range of temperatures, and soil composition.

## ***Geology and Engineering***

### **Applicable CA 4<sup>th</sup> Grade Standards**

- 4.a: Students know how to differentiate among igneous, sedimentary, and metamorphic rocks by referring to their properties and methods of formation (the rock cycle).
- 5.a: Students know some changes in the earth are due to slow processes, such as erosion, and some changes are due to rapid processes, such as landslides, volcanic eruptions, and earthquakes.

### **Applicable CA 6<sup>th</sup> Grade Standards**

- 1.a: Students know evidence of plate tectonics is derived from the fit of the continents; the location of earthquakes, volcanoes, and mid-ocean ridges; and the distribution of fossils, rock types, and ancient climatic zones.
- 1.b: Students know Earth is composed of several layers: a cold, brittle lithosphere; a hot, convecting mantle; and a dense, metallic core.
- 1.c: Students know lithospheric plates the size of continents and oceans move at rates of centimeters per year in response to movements in the mantle.
- 1.d: Students know that earthquakes are sudden motions along breaks in the crust called faults, and those volcanoes and fissures are locations where magma reaches the surface.
- 1.e: Students know that major geologic events, such as earthquakes, volcanic eruptions, and mountain building, result from plate motions.
- 1.g: Students know how to determine the epicenter of an earthquake and know that the effects of an earthquake on any region vary, depending on the size of the earthquake, the distance of the region from the epicenter, the local geology, and the type of construction in the region.

### ***It's Not Easy Being Green***

#### **Applicable CA 6<sup>th</sup> Grade Standards**

5.d: Students know different kinds of organisms may play similar ecological roles in similar biomes.

#### **Applicable CA 7<sup>th</sup> Grade Standards**

3.a: Students know both genetic variation and environmental factors are causes of evolution and diversity of organisms.

### ***Squid Dissection***

#### **Applicable CA 7<sup>th</sup> Grade Standards**

5.a: Students know plants and animals have levels of organization for structure and function, including cells, tissues, organs, organ systems, and the whole organism.

5.b: Students know organ systems function because of the contributions of individual organs, tissues, and cells. The failure of any part can affect the entire system.

### ***Water Quality***

#### **Applicable CA 5<sup>th</sup> Grade Standards**

6.b: Develop a testable question.

6.c: Plan and conduct a simple investigation based on a student-developed question and write instructions others can follow to carry out the procedure.

6.d: Identify the dependent and controlled variables in an investigation.

6.e: Identify a single independent variable in a scientific investigation and explain how this variable can be used to collect information to answer a question about the results of the experiment

6.h: Draw conclusions from scientific evidence and indicate whether further information is needed to support a specific conclusion.

#### **Applicable CA 6<sup>th</sup> Grade Standards**

7.a: Develop a hypothesis

7.d: Communicate the steps and results from an investigation in written reports and oral presentations.

7.f: Read a topographic map and a geologic map for evidence provided on the maps and construct and interpret a simple scale map.

#### **Applicable CA 7<sup>th</sup> Grade Standards**

7.e: Communicate the steps and results from an investigation in written reports and oral presentations.

#### **Applicable CA 8<sup>th</sup> Grade Standards**

5.e: Students know how to determine whether a solution is acidic, basic, or neutral.

9.a: Plan and conduct a scientific investigation to test a hypothesis

## **Outdoor Education Curriculum**

### ***Archery***

#### **Applicable CA 8<sup>th</sup> Grade Standards**

- 2.b: Students know when an object is subject to two or more forces at once, the result is the cumulative effect of all the forces.
- 2.d: Students know how to identify separately the two or more forces that are acting on a single static object, including gravity, elastic forces due to tension or compression in matter, and friction.

### ***Forest Ecology***

#### **Applicable CA 4<sup>th</sup> Grade Standards**

- 2.a: Students know plants are the primary source of matter and energy entering most food chains.
- 2.b: Students know producers and consumers (herbivores, carnivores, omnivores, and decomposers) are related in food chains and food webs and may compete with each other for resources in an ecosystem.
- 2.c: Students know decomposers, including many fungi, insects, and microorganisms, recycle matter from dead plants and animals.
- 3.a: Students know ecosystems can be characterized by their living and nonliving components.
- 3.b: Students know that in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.
- 3.c: Students know many plants depend on animals for pollination and seed dispersal, and animals depend on plants for food and shelter.
- 5.c: Students know moving water erodes landforms, reshaping the land by taking it away from some places and depositing it as pebbles, sand, silt, and mud in other places (weathering, transport, and deposition).

#### **Applicable CA 5<sup>th</sup> Grade Standards**

- 2.a: Students know many multi-cellular organisms have specialized structures to support the transport of materials.
- 2.e: Students know how sugar, water, and minerals are transported in a vascular plant.
- 2.f: Students know plants use carbon dioxide (CO<sub>2</sub>) and energy from sunlight to build molecules of sugar and release oxygen.

#### **Applicable CA 6<sup>th</sup> Grade Standards**

- 5.a: Students know energy entering ecosystems as sunlight, is transferred by producers into chemical energy through photosynthesis and then from organism to organism through food webs.
- 5.b: Students know matter is transferred over time from one organism to others in the food web and between organisms and the physical environment.
- 5.c: Students know populations of organisms can be categorized by the functions they serve in an ecosystem.
- 7.h: Identify changes in natural phenomena over time without manipulating the phenomena (e.g., a tree limb, a grove of trees, a stream, a hill-slope).

### ***Orienteering***

#### **Applicable CA 6<sup>th</sup> Grade Standards**

- 7.f: Read a topographic map and a geologic map for evidence provided on the maps and construct and interpret a simple scale map.

#### **Applicable CA 8<sup>th</sup> Grade Standards**

- 1.a: Students know position is defined in relation to some choice of a standard reference point and a set of reference directions.

### ***Astronomy***

#### **Applicable CA 5<sup>th</sup> Grade Standards**

- 5.a: Students know the Sun, an average star, is the central and largest body in the solar system and is composed primarily of hydrogen and helium.
- 5.b: Students know the solar system includes the planet Earth, the Moon, the Sun, eight other planets and their satellites, and smaller objects, such as asteroids and comets.
- 5.c: Students know the path of a planet around the Sun is due to the gravitational attraction between the Sun and the planet.

**Applicable CA 8<sup>th</sup> Grade Standards**

- 2.g: Students know the role of gravity in forming and maintaining the shapes of planets, stars, and the solar system.
- 4.a: Students know galaxies are clusters of billions of stars and may have different shapes.
- 4.b: Students know that the Sun is one of many stars in the Milky Way galaxy and that stars may differ in size, temperature, and color.
- 4.c: Students know how to use astronomical units and light years as measures of distances between the Sun, stars, and Earth.
- 4.d: Students know that stars are the source of light for all bright objects in outer space and that the Moon and planets shine by reflected sunlight, not by their own light.
- 4.e: Students know the appearance, general composition, relative position and size, and motion of objects in the solar system, including planets, planetary satellites, comets, and asteroids.

***Owl Pellet Dissection*****Applicable CA 6<sup>th</sup> Grade Standards**

- 5.c: Students know populations of organisms can be categorized by the functions they serve in an ecosystem.

**Applicable CA 7<sup>th</sup> Grade Standards**

- 3.a: Students know both genetic variation and environmental factors are causes of evolution and diversity of organisms.