California Alternate Performance Assessment (CAPA)
Science Blueprint
Level I: Grades 5, 8, and 10
(Blueprint adopted by the State Board of Education 3/06)

CALIFORNIA CONTENT STANDARDS		
Physical Science:	**Number of Tasks:**	**3**
	Percentage of Test:	**37.5%**
Kindergarten		
1.	**Properties of materials can be observed, measured, and predicted. As a basis for understanding this concept:**	
1a.	Students know objects can be described in terms of the materials they are made of (e.g., clay, cloth, paper) and their physical properties (e.g., color, size, shape, weight, texture, flexibility, attraction to magnets, floating, sinking). ✓ Identify color of object. ✓ Identify size of object. ✓ Identify texture of object.	
1b.	Students know water can be a liquid or a solid and can be made to change back and forth from one form to the other. ✓ Identify ice. ✓ Identify water.	
Grade 2		
1.	**The motion of objects can be observed and measured. As a basis for understanding this concept:**	
1c.	Students know the way to change how something is moving is by giving it a push or a pull. The size of the change is related to the strength, or the amount of force of the push or pull. ✓ Pull an object/switch. ✓ Push an object/switch.	
1e.	Students know objects fall to the ground unless something holds them up. ✓ Explore gravity by causing different objects to fall (e.g., feather, balloon, ball, etc.). ✓ Hold object and release upon request.	
Life Science:	**Number of Tasks:**	**2**
	Percentage of Test:	**25%**
Kindergarten		
2.	**Different types of plants and animals inhabit the earth. As a basis for understanding this concept:**	
2c.	Students know how to identify major structures of common plants and animals (e.g., stems, leaves, roots, arms, wings, legs). ✓ Identify body parts on self. ✓ Identify animal body parts.	
Grade 1		
2.	**Plants and animals meet their needs in different ways. As a basis for understanding this concept:**	
2b.	Students know both plants and animals need water, animals need food, and plants need light. ✓ Identify animals. ✓ Identify plants. ✓ Sort animals from plants.	

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Earth Science:	**Number of Tasks:**	**2**
	Percentage of Test:	**25%**
Kindergarten		
3.	**Earth is composed of land, air, and water. As a basis for understanding this concept:**	
3b.	Students know changes in weather occur from day to day and across seasons, affecting Earth and its inhabitants. ✓ Match pictures of weather to same. ✓ Identify various kinds of weather.	
Investigation and Experimentation:	**Number of Tasks:**	**1**
	Percentage of Test:	**12.5%**
Kindergarten		
4.	**Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:**	
4a.	Observe common objects by using the five senses. ✓ Attend to scents. ✓ Attend to sound. ✓ Attend to visual material.	
4c.	Describe the relative position of objects by using one reference (e.g., above or below). ✓ Follow simple positional receptive instruction (e.g., put water in bowl). ✓ Position objects by using one reference (e.g., in, on, above, etc.).	
Total Level I Tasks:	**Total Number of Tasks:**	**8**
	Percentage of Test:	**100%**

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California Alternate Performance Assessment (CAPA)
Science Blueprint
Level III: Grades 5
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CALIFORNIA CONTENT STANDARDS	
Physical Science:	**Number of Tasks: 2** **Percentage of Test: 25%**
Grade 4	
1.	**Electricity and magnetism are related effects that have many useful applications in everyday life. As a basis for understanding this concept:**
1f.	Students know that magnets have two poles and that like poles repel each other while unlike poles attract each other. ✓ Know that some objects are attracted to magnets.
Grade 5	
1.	**Elements and their combinations account for all the varied types of matter in the world. As a basis for understanding this concept:**
1a.	Students know that during chemical reactions the atoms in the reactant rearrange to form products with different properties. ✓ Know that two substances may combine to form a new substance.
1c.	Students know metals have properties in common, such as high electrical and thermal conductivity. Some metals, such as aluminum (Al), iron (Fe), nickel (Ni), copper (Cu), silver (Ag), and gold (Au), are pure elements; others, such as steel and brass, are composed of a combination of elemental metals. ✓ Know that metals conduct heat.
1g.	Students know properties of solid, liquid, and gaseous substances, such as sugar ($C_6H_{12}O_6$), water (H_2O), helium (He), oxygen (O_2), nitrogen (N_2), and carbon dioxide (CO_2). ✓ Know properties of matter: solid, liquid, gas.
Life Science:	**Number of Tasks: 2** **Percentage of Test: 25%**
Grade 4	
2.	**All organisms need energy and matter to live and grow. As a basis for understanding this concept:**
2b.	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. ✓ Know that plants (producers) are a source of food. ✓ Know that animals (consumers) eat plants and other animals for food.
3.	**Living organisms depend on one another and on their environment for survival. As a basis for understanding this concept:**
3b.	Students know that in any one particular environment, some kinds of plants and animals survive well, some survive less well and some cannot survive at all. ✓ Know that animals inhabit and can survive in different kinds of environments.
3c.	Students know many plants depend on animals for pollination and seed dispersal, and animals depend on plants for food and shelter. ✓ Know that animals use plants for shelter.

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Grade 5	
2.	**Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials. As a basis for understanding this concept:**
2b.	Students know how blood circulates through the heart chambers, lungs, and body and how carbon dioxide (CO_2) and oxygen (O_2) are exchanged in the lungs and tissues. ✓ Know that the heart pumps blood through the body. ✓ Know that oxygen is inhaled and carbon dioxide is exhaled.
2c.	Students know the sequential steps of digestion and the roles of teeth and the mouth, esophagus, stomach, small intestine, large intestine, and colon in the function of the digestive system. ✓ Know that the mouth aids in the digestion of food. ✓ Know that the stomach aids in the digestion of food. ✓ Know that the colon releases waste products.

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Earth Science:	**Number of Tasks:**	**2**
	Percentage of Test:	**25%**
Grade 4		
4.	**The properties of rocks and minerals reflect the processes that formed them. As a basis for understanding this concept:**	
4a.	Students know how to differentiate among igneous, sedimentary, and metamorphic rocks by referring to their properties and methods of formation. ✓ Know properties of various rocks (e.g., color, shiny, dull, rough, smooth).	
Grade 5		
3.	**Water on Earth moves between the oceans and land through the processes of evaporation and condensation. As a basis for understanding this concept:**	
3b.	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. ✓ Know that matter can change from one form to another.	
3c.	Students know water vapor in the air moves from one place to another and can form fog or clouds, which are tiny droplets of water or ice, and can fall to Earth as rain, hail, sleet, or snow. ✓ Know that water vapor can form fog or clouds. ✓ Know that water can fall to Earth as rain, hail, or snow.	
3d.	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. ✓ Know where fresh water is located (e.g., rivers, lakes). ✓ Know that the amount of fresh water is limited. ✓ Know that the availability of fresh water can be extended by decreasing the use of water.	
5.	**The solar system consists of planets and other bodies that orbit the Sun in predictable paths. As a basis for understanding this concept:**	
5a.	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. ✓ Know that the Sun produces heat and light.	
Investigation and Experimentation:	**Number of Tasks:**	**2**
	Percentage of Test:	**25%**
Grade 4		
6.	**Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:**	
6a.	Differentiate observation from inference and know scientists' explanations come partly from what they observe and partly from how they interpret their observations. ✓ Make inferences based on observations.	
6d.	Conduct multiple trials to test a prediction and draw conclusions about the relationships between predictions and results. ✓ Repeat observations to improve accuracy. ✓ Predict the outcome of a simple investigation.	

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Grade 5	
6.	**Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:**
6a.	Classify objects (e.g., rocks, plants, and leaves) in accordance with appropriate criteria. ✓ Classify objects by appropriate criteria.
6f.	Select appropriate tools (e.g., thermometers, meter sticks, balances, and graduated cylinders) and make quantitative observations. ✓ Select appropriate tools (e.g., ruler, scale, measuring cup) and make quantitative observations.
6g.	Record data by using appropriate graphic representations (including charts, graphs, and labeled diagrams) and make inferences based on those data. ✓ Represent data on a graph. ✓ Interpret simple bar/pictorial graphs.
Total Level III Tasks:	**Total Number of Tasks: 8** **Percentage of Test: 100%**

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California Alternate Performance Assessment (CAPA)
Science Blueprint
Level IV: Grade 8
(Blueprint adopted by the State Board of Education 3/06)

CALIFORNIA CONTENT STANDARDS		
Motion:	**Number of Tasks:**	**1**
	Percentage of Test:	**12.5%**
1.	**The velocity of an object is the rate of change of its position. As a basis for understanding this concept:**	
1a.	Students know position is defined in relation to some choice of a standard reference point and a set of reference directions. ✓ Know that the position of an object can be described by locating it in relation to a reference point (another object).	
1b.	Students know that average speed is the total distance traveled divided by the total time elapsed and that the speed of an object along the path traveled can vary. ✓ Know that an object's motion can be described by recording the change in position of the object over time.	
Forces:	**Number of Tasks:**	**1**
	Percentage of Test:	**12.5%**
2.	**Unbalanced forces cause change in velocity. As a basis for understanding this concept:**	
2a.	Students know a force has both direction and magnitude. ✓ Know that the way to change how something is moving is by giving it a push or a pull. ✓ Know that the size of the change is related to the amount of force of the push or pull.	
2d.	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. ✓ Know that forces that act on an object include gravity and friction.	
2f.	Students know the greater the mass of an object, the more force is needed to achieve the same rate of change in motion. ✓ Know that the greater mass of an object, the more force is needed to move the object.	
Structure of Matter:	**Number of Tasks:**	**1**
	Percentage of Test:	**12.5%**
3.	**Each of more than 100 elements of matter has distinct properties and a distinct atomic structure. All forms of matter are composed of one or more elements. As a basis for understanding this concept:**	
3f.	Students know how to use the periodic table to identify elements in simple compounds. ✓ Know that the periodic table is used to identify elements.	
Earth in the Solar System (Earth Science):	**Number of Tasks:**	**1**
	Percentage of Test:	**12.5%**
4.	**The structure and composition of the universe can be learned from studying the stars and galaxies and their evolution. As a basis for understanding this concept:**	
4b.	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. ✓ Know that the Sun is an average star that provides heat and light to Earth.	
4e.	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. ✓ Know that the Earth is one planet that orbits the Sun. ✓ Know that the Moon orbits the Earth.	

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Reactions:	**Number of Tasks:**	**1**
	Percentage of Test:	**12.5%**
5.	**Chemical reactions are processes in which atoms are rearranged into different combinations of molecules. As a basis for understanding this concept:**	
5d.	Students know physical processes include freezing and boiling, in which a material changes form with no chemical reaction. ✓ Know the physical changes for a liquid when it changes from one state to another (freezing, melting, boiling).	
Chemistry of Living Systems: (Life Science)	**Number of Tasks:**	**0**
	Percentage of Test:	**0%**
Periodic Table:	**Number of Tasks:**	**1**
	Percentage of Test:	**12.5%**
7.	**The organization of the periodic table is based on the properties of the elements and reflects the structure of atoms. As a basis for understanding this concept:**	
7c.	Students know substances can be classified by their properties, including their melting temperature, density, hardness, and thermal and electrical conductivity. ✓ Know that substances can be classified by their physical properties (e.g., hardness, flexibility, density, and thermal conductivity).	
Density and Buoyancy:	**Number of Tasks:**	**1**
	Percentage of Test:	**12.5%**
8.	**All objects experience a buoyant force when immersed in a fluid. As a basis for understanding this concept:**	
8d.	Students know how to predict whether an object will float or sink. ✓ Know that some objects float or sink.	
Investigation and Experimentation:	**Number of Tasks:**	**1**
	Percentage of Test:	**12.5%**
9.	**Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:**	
9a.	Plan and conduct a scientific investigation to test a hypothesis. ✓ Make a hypothesis based on prior knowledge. ✓ Conduct a scientific investigation to test a hypothesis.	
9b.	Evaluate the accuracy and reproducibility of data. ✓ Evaluate the accuracy of data.	
9e.	Construct appropriate graphs from data and develop quantitative statements about the relationships between variables. ✓ Construct appropriate graphs from data (e.g., bar, pictograph, pie graph). ✓ Interpret relationships between variables (e.g., time vs. temperature; time vs. population).	
Total Level IV Tasks:	**Total Number of Tasks:**	**8**
	Percentage of Test:	**100%**

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California Alternate Performance Assessment (CAPA)
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Level V: Grade 10
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CALIFORNIA CONTENT STANDARDS	
Biology:	**Number of Tasks: 3** **Percentage of Test: 37.5%**
Cell Biology	
1.	**The fundamental life processes of plants and animals depend on a variety of chemical reactions that occur in specialized areas of the organism's cells. As a basis for understanding this concept:**
1f.	Students know usable energy is captured from sunlight by chloroplasts and is stored through the synthesis of sugar from carbon dioxide. ✓ Know that plants capture sunlight and convert it to energy. ✓ Know that plants use energy to make food.
Ecology	
6.	**Stability in an ecosystem is a balance between competing effects. As a basis for understanding this concept:**
6b.	Students know how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size. ✓ Know that changes in ecosystems may be due to climate changes, impact of human activity, and changes in population size.
6e.	Students know a vital part of an ecosystem is the stability of its producers and decomposers. ✓ Know the role of producers and decomposers in an ecosystem.
6f.	Students know at each link in a food web some energy is stored in newly made structures but much energy is dissipated into the environment as heat. This dissipation may be represented in an energy pyramid. ✓ Know levels of the energy pyramid (e.g., producers, consumers). ✓ Know the role of an organism in a simple food web.
Evolution (Speciation)	
8.	**Evolution is the result of genetic changes that occur in constantly changing environments. As a basis for understanding this concept:**
8e.	Students know how to analyze fossil evidence with regard to biological diversity, episodic speciation, and mass extinction. ✓ Know that fossil evidence can be analyzed with regard to species change over time and mass extinction.
Physiology (Homeostasis)	
9.	**As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic) despite changes in the outside environment. As a basis for understanding this concept:**
9a.	Students know how the complementary activity of major body systems provide cells with oxygen and nutrients and removes toxic waste products such as carbon dioxide. ✓ Know that the circulatory system moves nutrients and oxygen in blood through the body. ✓ Know that the excretory system removes waste from the body.
9b.	Students know how the nervous system mediates communication between different parts of the body and the body's interactions with the environment. ✓ Know that sensory organs (e.g., by allowing for touch, taste, smell, hearing,) provide information about the environment (e.g. temperature, light, and sound).

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Physiology (Infection and Immunity)	
10.	**Organisms have a variety of mechanisms to combat disease. As a basis for understanding this concept:**
10a.	Students know the role of the skin in providing nonspecific defenses against infection. ✓ Know that the skin protects the body from infections.
10c.	Students know how vaccination protects an individual from infectious disease. ✓ Know that vaccination protects an individual from infectious disease.
Physics:	**Number of Tasks: 1** **Percentage of Test: 12.5%**
Motion and Forces	
1.	**Newton's laws predict the motion of most objects. As a basis for understanding this concept:**
1c.	Students know how to apply the law F=ma to solve one-dimensional motion problems that involve constant forces (Newton's second law). ✓ Know that the greater the mass of an object, the more force is needed to achieve the same rate of change in motion.
1e.	Students know the relationship between the universal law of gravitation and the effect of gravity on an object at the surface of Earth. ✓ Know that gravity is a force that acts on an object on Earth.
Chemistry:	**Number of Tasks: 1** **Percentage of Test: 12.5%**
Atomic and Molecular Structure	
1.	**The periodic table displays the elements in increasing atomic number and shows how periodicity and chemical properties of the elements relates to atomic structure. As a basis for understanding this concept:**
1b.	Students know how to use the periodic table to identify metals, semimetals, non-metals, and halogens. ✓ Know that elements on the periodic table are classified as metals, non-metals, and inert gases.
Acids and Bases	
5.	**Acid, bases, and salts are three classes of compounds that form ions in water solution. As a basis for understanding this concept:**
5d.	Students know how to use the pH scale and to characterize acid and base solutions. ✓ Know that the pH scale is used to identify acid and base solutions.
Solutions	
6.	**Solutions are homogeneous mixtures of two or more substances. As a basis for understanding this concept:**
6c.	Students know temperature, pressure, and surface area affect the dissolving process. ✓ Know how stirring, temperature, and surface area of a substance can affect the dissolving process.

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Earth Science:	**Number of Tasks: 2** **Percentage of Test: 25%**
Dynamic Earth Processes	
3.	**Plate tectonics operating over geologic time has changed the patterns of land, sea, and mountains on Earth's surface. As the basis for understanding this concept:**
3d.	Students know why and how earthquakes occur and the scales used to measure their intensity and magnitude. ✓ Know the general characteristics of an earthquake. ✓ Know that earthquakes can be the result of sudden motions along breaks in the crust called faults.
3e.	Students know there are two kinds of volcanoes: one kind with violent eruptions producing steep slopes and the other kind with voluminous lava flows producing gentle slopes. ✓ Know the general characteristics of a volcano.
Energy in the Earth System	
6.	**Climate is the long-term average of a region's weather and depends on many factors. As a basis for understanding this concept:**
6a.	Students know weather (in the short run) and climate (in the long run) involve the transfer of energy into and out of the atmosphere. ✓ Know the general characteristics of weather. ✓ Know the general characteristics of climate.
6b.	Students know the effects on climate of latitude, elevation, topography, and proximity of large bodies of water and cold or warm ocean currents. ✓ Know the climate of specific biomes.
California Geology	
9.	**The geology of California underlies the state's wealth of natural resources as well as its natural hazards. As a basis for understanding this concept:**
9b.	Students know the principal natural hazards in different California regions and the geologic basis of those hazards. ✓ Know different kinds of natural hazards (e.g., earthquakes, volcanoes, landslides).
Investigation and Experimentation:	**Number of Tasks: 1** **Percentage of Test: 12.5%**
1.	**Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other four strands, students should develop their own questions and perform investigations. Students will:**
1a.	Select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data. ✓ Select and use appropriate tools and technology (e.g., calculators, balances, magnifying lens, binoculars) to perform tests. ✓ Collect, display, and analyze data.
1c.	Identify possible reasons for inconsistent results, such as sources of error or uncontrolled conditions. ✓ Identify possible sources of error in an experiment.
1f.	Distinguish between hypothesis and theory as scientific terms. ✓ Form a simple hypothesis based on observations.

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1h.	Read and interpret topographic and geologic maps. ✓ Interpret scale models, maps, and diagrams.	
Total Level V Tasks:	**Total Number of Tasks:**	**8**
	Percentage of Test:	**100%**

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