California Science

Fifth Grade

Physical Science: Elements and their combinations account for all the varied types of matter in the world. As a basis for understanding this concept, students will: 1	**a** know that during chemical reactions the atoms in the reactants rearrange to form products with different properties . 1.A
	b know all matter is made of atoms, which may combine to form molecules. 1.B
	c 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. 1.C
	d know that each element is made of one kind of atom and that the elements are organized in the periodic table by their chemical properties. 1.D
	e know scientists have developed instruments that can create discrete i m ages of atoms and molecules that show that the atoms and molecules often occur in well - ordered arrays. 1.E
	f know differences in chemical and physical properties of substances are used to separate mixtures and identify compounds. 1.F
	g know properties of solid, liquid, and gaseous substances, such as sugar (C 6 H 12 O 6), w ater (H 2 O), helium (He), oxygen (O 2), nitrogen (N 2), and carbon dioxide (C O 2). 1.G
	h know living organisms and most materials are composed of just a few elements 1.H
	i know the common properties of salts, such as sodium chloride (NaCl). 1.I
Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials. As a basis for understanding this concept, students will	**a** know many multi-cellular organisms have specialized structures to support the transport of materials. 2.A
	b know how blood circulates through the heart chambers, lungs, and body and how carbon dioxide (CO2) and oxygen (O2) are exchanged in the lungs and tissues. 2.B
	c 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. 2.C
	d know the role of the kidney in removing cellular waste from blood and converting it into urine, which is stored in the bladder. 2.D

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	e know how sugar, water, and minerals are transported in a vascular plant. 2.E
	f know plants use carbon dioxide (CO_2) and energy from sunlight to build molecules of sugar and release oxygen. 2.F
	g know plant and animal cells break down sugar to obtain energy, a process resulting in carbon dioxide (CO_2) and water (respiration). 2.G
Water on Earth moves between the oceans and land through the processes of evaporation and condensation. As a basis for understanding this concept, students will:	**a** know most of Earth's water is present as salt water in the oceans, which cover most of Earth's surface. 3.A
	b 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.B
	c 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. 3.C
	d 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.D
	e know the origin of the water used by their local communities. 3.E
Energy from the Sun heats Earth unevenly, causing air movements that result in changing weather patterns. As a basis for understanding this concept, students will:	**a** know uneven heating of Earth causes air movements (convection currents). 4.A
	b know the influence that the ocean has on the weather and the role that the water cycle plays in weather patterns. 4.B
	c know the causes and effects of different types of severe weather. 4.C
	d know how to use weather maps and data to predict local weather and know that weather forecasts depend on many variables. 4.D
	e know that the Earth's atmosphere exerts a pressure that decreases with distance above Earth's surface and that at any point it exerts this pressure equally in all directions. 4.E
The solar system consists of planets and other bodies that orbit the Sun in predictable paths. As a basis for understanding this concept, students will:	**a** 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.A
	b 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.B
	now the path of a planet around the Sun is due to the gravitational attraction etween the Sun and the planet. 5.C

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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:

a classify objects (e.g., rocks, plants, leaves) in accordance with appropriate criteria. 6.A

b develop a testable question. 6.B

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.C

d identify the dependent and controlled variables in an investigation. 6.D

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.D

f select appropriate tools (e.g., thermometers, meter sticks, balances, and graduated cylinders) and make quantitative observations. 6.F

g record data by using appropriate graphic representations (including charts, graphs, and labeled diagrams) and make inferences based on those data. 6.G

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

i write a report of an investigation that includes conducting tests, collecting data or examining evidence, and drawing conclusions. 6.I