Introduction - Grade 5 Science

The following released test questions are taken from the Grade 5 Science Standards Test. This test is one of the California Standards Tests administered as part of the Standardized Testing and Reporting (STAR) Program under policies set by the State Board of Education.

All questions on the California Standards Tests are evaluated by committees of content experts, including teachers and administrators, to ensure their appropriateness for measuring the California academic content standards in Grade 5 Science. In addition to content, all items are reviewed and approved to ensure their adherence to the principles of fairness and to ensure no bias exists with respect to characteristics such as gender, ethnicity, and language.

This document contains released test questions from the California Standards Test forms in 2004, 2005, 2006, 2007, and 2008. First on the pages that follow are lists of the Grades 4 and 5 standards assessed on the Grade 5 Science Test. Note that Grade 5 Earth Sciences Standard 3.e is not assessed on the Grade 5 Science Test and, therefore, is not represented in these released test questions. Next are released test questions. Following the questions is a table that gives the correct answer for each question, the content standard that each question is measuring, and the year each question appeared on the test. Reference sheets, provided for students taking the test, are also included as they are necessary in answering some of the questions.

The following table lists each reporting cluster, the number of items that appear on the exam, and the number of released test questions that appear in this document. Note that the questions testing the Investigation and Experimentation content standards are embedded within the correlating reporting cluster (i.e. Grade 5 Life Sciences).

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REPORTING CLUSTER	NUMBER OF QUESTIONS ON EXAM	NUMBER OF RELEASED TEST QUESTIONS
Physical Sciences		
Grade 5 (Standards: 5PS1. a-i)	11	13
Grade 4 (Standards: 4PS1. a-g)	8	11
Life Sciences		
Grade 5 (Standards: 5LS2. a-g)	13	16
Grade 4 (Standards: 4LS2. a-c, 4LS3. a-d)	9	12
Earth Sciences		
Grade 5 (Standards: 5ES3. a-e, 5ES4. a-e, 5ES5. a-c)	11	14
Grade 4 (Standards: 4ES4. a-b, 4ES5. a-c)	8	9
TOTAL	60	75

In selecting test questions for release, three criteria are used: (1) the questions adequately cover a selection of the academic content standards assessed on the Grade 5 Science Test; (2) the questions demonstrate a range of difficulty; and (3) the questions present a variety of ways standards can be assessed. These released test questions do not reflect all of the ways the standards may be assessed. Released test questions will not appear on future tests.

For more information about the California Standards Tests, visit the California Department of Education's Web site at http://www.cde.ca.gov/ta/tg/sr/resources.asp.

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THE PHYSICAL SCIENCES REPORTING CLUSTER

The following nine California content standards are included in the Grade 5 Physical Sciences reporting cluster and are represented in this booklet by 13 test questions. These questions represent only some ways in which these standards may be assessed on the California Grade 5 Science Standards Test.

CALIFORNIA CONTENT STANDARDS IN THIS REPORTING CLUSTER

Physical Sciences	
	Grade 5 Standards
5PS1.	**Elements and their combinations account for all the varied types of matter in the world. As a basis for understanding this concept:**
5PS1.a.	*Students know* that during chemical reactions the atom in the reactants rearrange to form products with different properties.
5PS1.b.	*Students know* all matter is made of atoms, which may combine to form molecules.
5PS1.c.	*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.
5PS1.d.	*Students 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.
5PS1.e.	*Students know* scientists have developed instruments that can create discrete images of atoms and molecules that show that the atoms and molecules often occur in well-ordered arrays.
5PS1.f.	*Students know* differences in chemical and physical properties of substances are used to separate mixtures and identify compounds.
5PS1.g.	*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).
5PS1.h.	*Students know* living organisms and most materials are composed of just a few elements.
5PS1.i.	*Students know* the common properties of salts, such as sodium chloride (NaCl).

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THE PHYSICAL SCIENCES REPORTING CLUSTER

The following seven California content standards are included in the Grade 4 Physical Sciences reporting cluster and are represented in this booklet by 9 test questions. These questions represent only some ways in which these standards may be assessed on the California Grade 5 Science Standards Test.

CALIFORNIA CONTENT STANDARDS IN THIS REPORTING CLUSTER

Physical Sciences	
	Grade 4 Standards
4PS1.	**Electricity and magnetism are related effects that have many useful applications in everyday life. As a basis for understanding this concept:**
4PS1.a.	*Students know* how to design and build simple series and parallel circuits by using components such as wires, batteries, and bulbs.
4PS1.b.	*Students know* how to build a simple compass and use it to detect magnetic effects, including Earth's magnetic field.
4PS1.c.	*Students know* electric currents produce magnetic fields and know how to build a simple electromagnet.
4PS1.d.	*Students know* the role of electromagnets in the construction of electric motors, electric generators, and simple devices, such as doorbells and earphones.
4PS1.e.	*Students know* electrically charged objects attract or repel each other.
4PS1.f.	*Students know* that magnets have two poles (north and south) and that like poles repel each other while unlike poles attract each other.
4PS1.g.	*Students know* electrical energy can be converted to heat, light, and motion.

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THE LIFE SCIENCES REPORTING CLUSTER

The following seven California content standards are included in the Grade 5 Life Sciences reporting cluster and are represented in this booklet by 12 test questions. These questions represent only some ways in which these standards may be assessed on the California Grade 5 Science Standards Test.

CALIFORNIA CONTENT STANDARDS IN THIS REPORTING CLUSTER

Life Sciences	
	Grade 5 Standards
5LS2.	**Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials. As a basis for understanding this concept:**
5LS2.a.	*Students know* many multicellular organisms have specialized structures to support the transport of materials.
5LS2.b.	*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.
5LS2.c.	*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.
5LS2.d.	*Students know* the role of the kidney in removing cellular waste from blood and converting it into urine, which is stored in the bladder.
5LS2.e.	*Students know* how sugar, water, and minerals are transported in a vascular plant.
5LS2.f.	*Students know* plants use carbon dioxide (CO_2) and energy from sunlight to build molecules of sugar and release oxygen.
5LS2.g.	*Students know* plant and animal cells break down sugar to obtain energy, a process resulting in carbon dioxide (CO_2) and water (respiration).

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THE LIFE SCIENCES REPORTING CLUSTER

The following seven California content standards are included in the Grade 4 Life Sciences reporting cluster and are represented in this booklet by 11 test questions. These questions represent only some ways in which these standards may be assessed on the California Grade 5 Science Standards Test.

CALIFORNIA CONTENT STANDARDS IN THIS REPORTING CLUSTER

Life Sciences	
	Grade 4 Standards
4LS2.	**All organisms need energy and matter to live and grow. As a basis for understanding this concept:**
4LS2.a.	*Students know* plants are the primary source of matter and energy entering most food chains.
4LS2.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.
4LS2.c.	*Students know* decomposers, including many fungi, insects, and microorganisms, recycle matter from dead plants and animals.
4LS3.	**Living organisms depend on one another and on their environment for survival. As a basis for understanding this concept:**
4LS3.a.	*Students know* ecosystems can be characterized by their living and nonliving components.
4LS3.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.
4LS3.c.	*Students know* many plants depend on animals for pollination and seed dispersal, and animals depend on plants for food and shelter.
4LS3.d.	*Students know* that most microorganisms do not cause disease and that many are beneficial.

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THE EARTH SCIENCES REPORTING CLUSTER

The following 13 California content standards are included in the Grade 5 Earth Sciences reporting cluster and are represented in this booklet by 14 test questions. These questions represent only some ways in which these standards may be assessed on the California Grade 5 Science Standards Test.

CALIFORNIA CONTENT STANDARDS IN THIS REPORTING CLUSTER

Earth Sciences	
	Grade 5 Standards
5ES3.	**Water on Earth moves between the oceans and land through the processes of evaporation and condensation. As a basis for understanding this concept:**
5ES3.a.	*Students know* most of Earth's water is present as salt water in the oceans, which cover most of Earth's surface.
5ES3.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.
5ES3.c.	*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.
5ES3.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.
5ES3.e.	*Students know* the origin of the water used by their local communities.
5ES4.	**Energy from the Sun heats Earth unevenly, causing air movements that result in changing weather patterns. As a basis for understanding this concept:**
5ES4.a.	*Students know* uneven heating of Earth causes air movements (convection currents).
5ES4.b.	*Students know* the influence that the ocean has on the weather and the role that the water cycle plays in weather patterns.
5ES4.c.	*Students know* the causes and effects of different types of severe weather.
5ES4.d.	*Students know* how to use weather maps and data to predict local weather and know that weather forecasts depend on many variables.
5ES4.e.	*Students know* that 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.
5ES5.	**The solar system consists of planets and other bodies that orbit the Sun in predictable paths. As a basis for understanding this concept:**
5ES5.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.
5ES5.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.
5ES5.c.	*Students know* the path of a planet around the Sun is due to the gravitational attraction between the Sun and the planet.

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THE EARTH SCIENCES REPORTING CLUSTER

The following five California content standards are included in the Grade 4 Earth Sciences reporting cluster and are represented in this booklet by nine test questions. These questions represent only some ways in which these standards may be assessed on the California Grade 5 Science Standards Test.

CALIFORNIA CONTENT STANDARDS IN THIS REPORTING CLUSTER

Earth Sciences	
	Grade 4 Standards
4ES4.	**The properties of rocks and minerals reflect the processes that formed them. As a basis for understanding this concept:**
4ES4.a.	*Students know* how to differentiate among igneous, sedimentary, and metamorphic rocks by referring to their properties and methods of formation (the rock cycle).
4ES4.b.	*Students know* how to identify common rock-forming minerals (including quartz, calcite, feldspar, mica, and hornblende) and ore minerals by using a table of diagnostic properties.
4ES5.	**Waves, wind, water, and ice shape and reshape Earth's land surface. As a basis for understanding this concept:**
4ES5.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.
4ES5.b.	*Students know* natural processes, including freezing and thawing and the growth of roots, cause rocks to break down into smaller pieces.
4ES5.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).

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INVESTIGATION AND EXPERIMENTATION

The following nine California content standards are distributed among the Grade 5 reporting clusters and are represented in this booklet by four test questions. These questions represent only some ways in which these standards may be assessed on the California Grade 5 Science Standards Test.

CALIFORNIA CONTENT STANDARDS IN THIS REPORTING CLUSTER

Investigation and Experimentation	
	Grade 5 Standards
5IE6.	**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:**
5IE6.a.	Classify objects (e.g., rocks, plants, leaves) in accordance with appropriate criteria.
5IE6.b.	Develop a testable question.
5IE6.c.	Plan and conduct a simple investigation based on a student-developed question and write instructions others can follow to carry out the procedure.
5IE6.d.	Identify the dependent and controlled variables in an investigation.
5IE6.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.
5IE6.f.	Select appropriate tools (e.g., thermometers, meter sticks, balances, and graduated cylinders) and make quantitative observations.
5IE6.g.	Record data by using appropriate graphic representations (including charts, graphs, and labeled diagrams) and make inferences based on those data.
5IE6.h.	Draw conclusions from scientific evidence and indicate whether further information is needed to support a specific conclusion.
5IE6.i.	Write a report of an investigation that includes conducting tests, collecting data or examining evidence, and drawing conclusions.

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INVESTIGATION AND EXPERIMENTATION

The following six California content standards are distributed among the Grade 4 reporting clusters and are represented in this booklet by three test questions. These questions represent only some ways in which these standards may be assessed on the California Grade 5 Science Standards Test.

CALIFORNIA CONTENT STANDARDS IN THIS REPORTING CLUSTER

Investigation and Experimentation	
	Grade 4 Standards
4IE6.	**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:**
4IE6.a.	Differentiate observation from inference (interpretation) and know scientists' explanations come partly from what they observe and partly from how they interpret their observations.
4IE6.b.	Measure and estimate the weight, length, or volume of objects.
4IE6.c.	Formulate and justify predictions based on cause-and-effect relationships.
4IE6.d.	Conduct multiple trials to test a prediction and draw conclusions about the relationships between predictions and results.
4IE6.e.	Construct and interpret graphs from measurements.
4IE6.f.	Follow a set of written instructions for a scientific investigation.

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1 **Which action will result in a product with new chemical properties?**

A shredding a newspaper

B breaking a mirror

C cutting wood

D popping popcorn

CSZ20059

2 **Which of the following represents a chemical reaction?**

A a sugar cube dissolving in water

B ice cubes forming in a freezer

C ice cream melting in a bowl

D a cake baking in an oven

CSZ20560

3 **What do water, aluminum, redwood trees, and valley quail all have in common?**

A They are all pure elements.

B They are all made of cells.

C They are all living creatures.

D They are all made of atoms.

CSZ10068

4 **Sterling silver is a combination of silver and copper. Which of the following is also a combination of two or more metals?**

A aluminum

B lead

C gold

D brass

CSZ10110

5 **A metal spoon was left in a pot of boiling soup. The cook burned a finger by touching the spoon. Why did the finger get burned?**

A The metal spoon chemically reacted with the cook's hand.

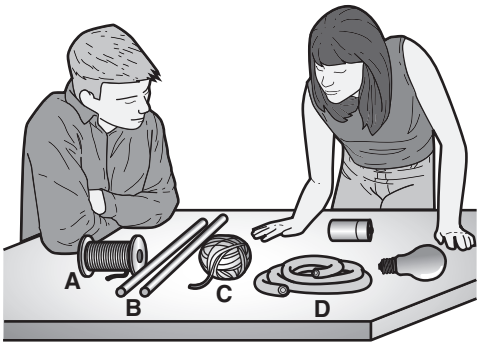
B The metal spoon conducted electricity to the cook's hand.

C The metal spoon conducted heat to the cook's hand.

D The metal spoon insulated the cook's hand.

CSZ10266

6 **Students are gathering materials and building an electrical circuit.**



Which material will allow electricity to flow between the battery and the light bulb?

A copper wire

B wooden rod

C cotton string

D rubber tube

CSZ50041

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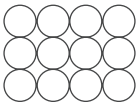
7 **A scientist uses an instrument to observe the pattern of molecules in a substance. The picture below shows what the scientist sees.**



What state of matter is the scientist *most* likely observing?

A gas

B liquid

C vapor

D solid

CSZ20171

8 **A scientist needs to take a picture of the well-ordered arrangements of the atoms and molecules within a substance. Which of the following instruments would be *best* for the scientist to use?**

A a laser light with holograph

B a seismograph

C an electron microscope

D a stereoscope

CSZ10300

9 **The diagram below shows a mixture.**

Which of the following pieces of equipment should be used to separate this mixture?

A magnet

B balance

C funnel

D hot plate

CSZ10130

10 **Which of the following is a property of CO_2 gas?**

A It feels like a rock.

B It smells like a lemon.

C It is colorless.

D It is hard.

CSZ10302

11 **All living things contain which element?**

A helium

B sodium

C copper

D carbon

CSZ20517

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12 **Plants and animals are composed of organic compounds. Which of the following are the common elements found in organic compounds?**

A iron, oxygen, nickel, copper

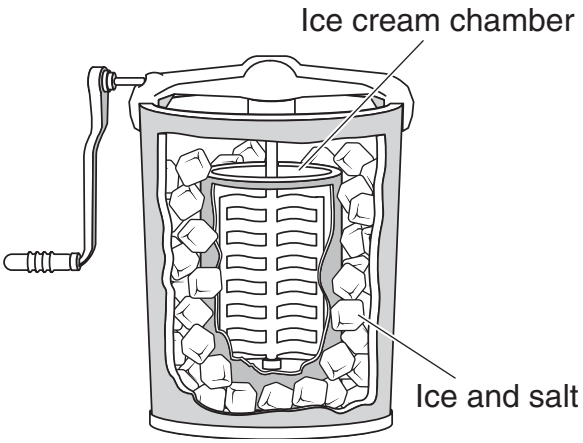
B sodium, potassium, gold, hydrogen

C helium, neon, argon, krypton

D carbon, hydrogen, oxygen, nitrogen

CSZ10233

13 **When homemade ice cream is made, salt is added to the ice that surrounds the ice cream chamber.**



Which property of salt is important when making ice cream?

A Salt conducts electricity in water.

B Salt dissolves in water.

C Salt lowers the freezing point of water.

D Salt adds flavor to the ice cream mixture.

CSZ10027

14 **Which *best* describes a parallel circuit?**

A Electricity flows along one pathway.

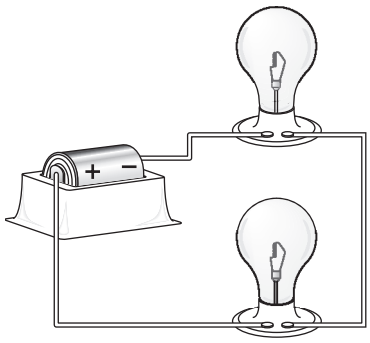
B The flow of electricity comes from one source.

C Electricity flows along more than one pathway.

D The flow of electricity comes from more than one source.

CSZ10383

15 **The diagram below shows an electrical circuit.**



This circuit is a series circuit because

A it has two light bulbs.

B the same current flows through both light bulbs.

C it uses a single battery.

D the current is divided between the light bulbs.

CSZ20211

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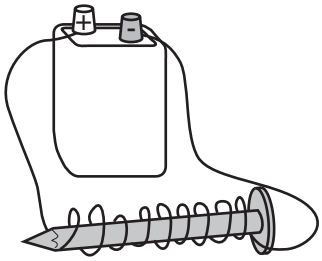
16



Which of the following is shown above?

A electromagnet

B electric motor

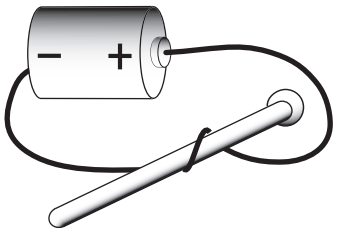
C electric generator

D transformer

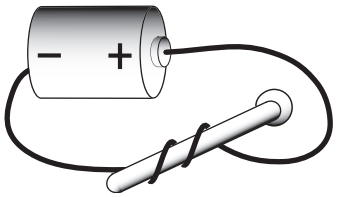
CSZ10350

17 **Which of the following electromagnets would have the greatest magnetic field?**

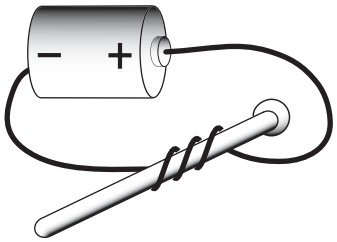
A



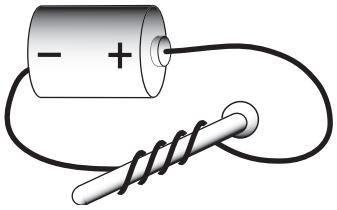
B



C



D



CSZ10387

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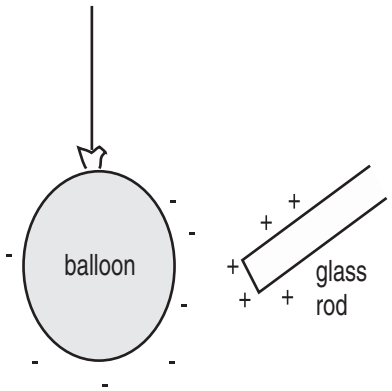
18 **A balloon has a negative charge. A glass rod has a positive charge.**



What will happen when the glass rod is brought near the balloon?

A The balloon will be attracted to the rod.

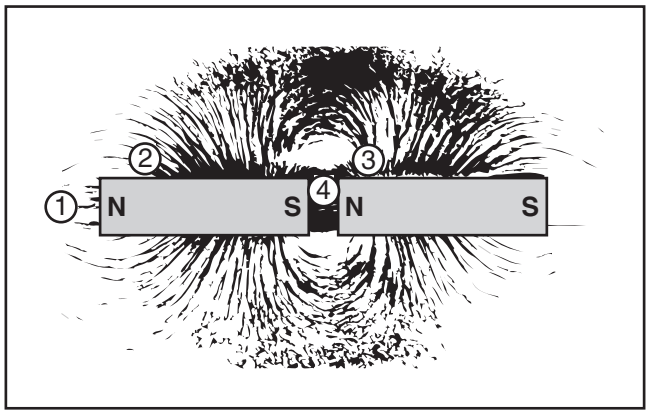
B The balloon will be repelled by the rod.

C The balloon will remain in place.

D The balloon will spin in circles.

CSZ10182

19 **Iron filings and bar magnets were placed on a sheet of paper. The following diagram shows the pattern made on the paper.**



At which location is the magnetic field the strongest?

A 1

B 2

C 3

D 4

CSZ10384

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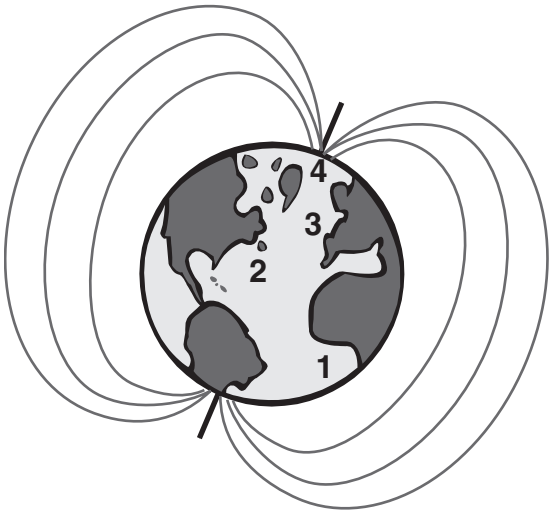
20 **The diagram below shows that the magnetic field of Earth is similar to that of a bar magnet.**



At which location is Earth's magnetic field the strongest?

A 1

B 2

C 3

D 4

CSZ10385

21 **Which of the following converts electrical energy into motion?**

A light switch

B electric stove

C light bulb

D electric fan

CSZ10278

22 **When electric current flows through the metal filament of a light bulb, electrical energy is converted to**

A heat energy only.

B heat and light energy.

C light and motion energy.

D light energy only.

CSZ20273

23 **Which of the following systems breaks food into nutrients that can be used by the body?**

A circulatory

B digestive

C respiratory

D reproductive

CSZ10304

24 **Which of the following is a harmful waste material that leaves the blood and travels through the lungs before leaving the body?**

A CO_2

B O_2

C H_2O

D NaCl

CSZ10243

25 **Where does oxygen-rich blood go after leaving the lungs?**

A the brain

B the heart

C the kidney

D the stomach

CSZ10104

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26 **The digestion process begins in which of the following?**

A large intestine

B mouth

C small intestine

D stomach

CSZ10244

27 **Which list gives the correct order of food traveling through the digestive system after it is swallowed?**

A stomach, esophagus, large intestine, small intestine

B small intestine, large intestine, esophagus, stomach

C esophagus, stomach, large intestine, small intestine

D esophagus, stomach, small intestine, large intestine

CSZ20156

28 **Which *best* describes the role of the esophagus in digestion?**

A It releases acid and mixes food.

B It aids in absorption of nutrients from food.

C It carries food from the mouth to the stomach.

D It carries food from the stomach to the intestines.

CSZ10326

29 **Which organ removes cell waste from the blood?**

A the large intestine

B the small intestine

C the kidney

D the heart

CSZ10086

30 **Which of the following *best* explains how stems transport water to other parts of the plant?**

A through a chemical called chlorophyll

B by using photosynthesis

C through a system of tubes

D by converting water to food

CSZ10245

31 **Which of the following gases do plants use in photosynthesis?**

A hydrogen

B oxygen

C carbon dioxide

D carbon monoxide

CSZ10292

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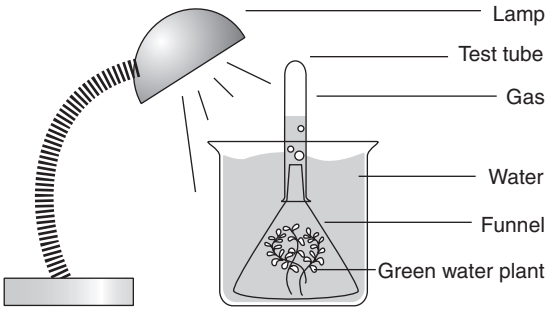
32

Photosynthesis Experiment



Which gas is forming in the test tube shown above?

A carbon dioxide

B hydrogen

C oxygen

D nitrogen

CSZ10031

33 **Which of the following is broken down in the body to release energy?**

A sugar

B water

C salt

D oxygen

CSZ10247

34 **Which of the following is produced when sugar is digested in an animal cell?**

A carbon dioxide

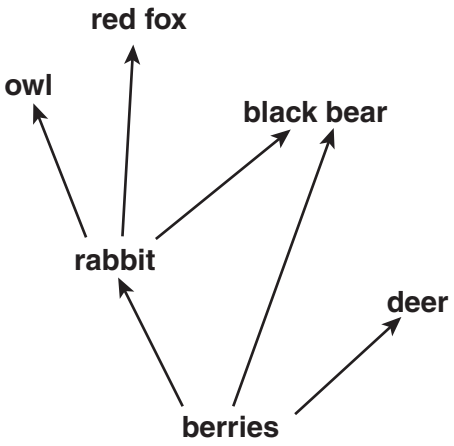
B chlorophyll

C oxygen

D sunlight

CSZ10238

35 **The diagram below shows a simple food web.**



Which animal is classified as an omnivore?

A red fox

B deer

C black bear

D rabbit

CSZ20162

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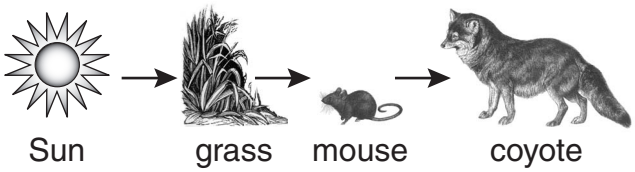
36 **The diagram below shows a simple food chain.**



Which of the following animals might compete with the coyote in this food chain?

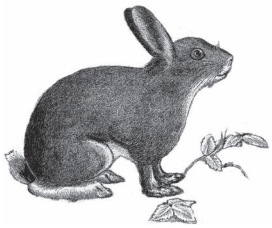
A

deer

C

owl

B



rabbit

D

woodpecker

CSZ20004

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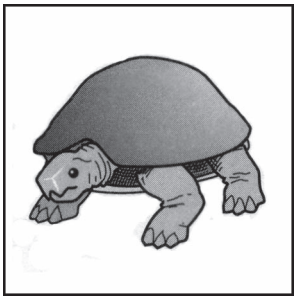
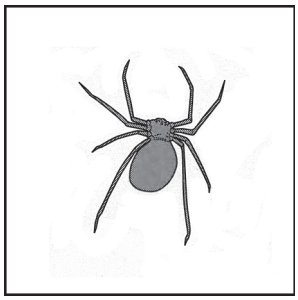
37 **A group of students is building a model of an ecosystem. Which of the following organisms should the students select to act as a decomposer?**



A

C

B



D

CSZ10160

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38 **Decomposers are important in the food chain because they**

A produce their own food using light from the Sun.

B stop the flow of energy from one organism to another.

C break down dead organisms and recycle nutrients into the soil.

D are microscopic and other organisms cannot consume them.

CSZ50776

39 **Which of the following is a living component of a desert in California?**

A low rainfall

B hot temperature

C polar bear

D horned lizard

CSZ20146

40 **Salt concentration, water temperature, plankton, and the whale shark might all be used in a description of an ocean**

A climate.

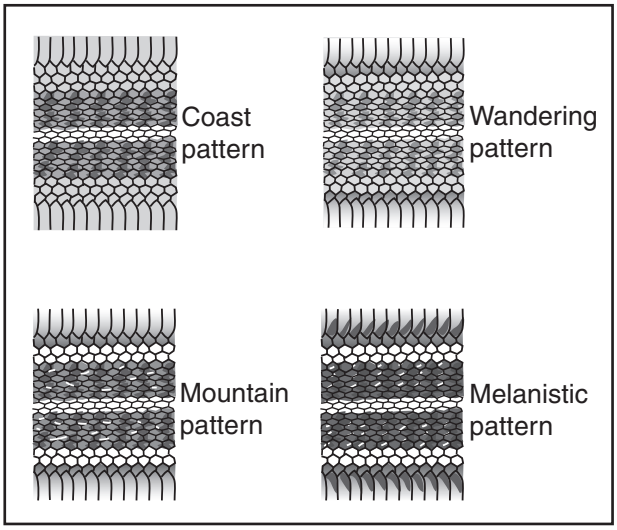
B food web.

C ecosystem.

D population.

CSZ20249

41 **Shown below are four different skin patterns found in the western garter snake.**



The patterns *most* likely reflect differences in the snakes'

A life cycle.

B food source.

C size.

D habitat.

CSZ10163

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42 **A student wants to put some plants in a window-box planter. The window selected for the plants is always shaded by a large tree outside the window.**

Which characteristic of the plants would *most* likely affect the plants' growth in this location?

A leaf shape

B light requirement

C plant price

D flower color

CSZ10001

43 **Which animals are *most* likely to carry the seeds found in berries from the parent plant to another area?**

A bees

B birds

C flies

D caterpillars

CSZ10356

44 **Peach trees have sweet-smelling blossoms and produce rich fruit. What is the main purpose of the flowers of a peach tree?**

A to attract bees for pollination

B to create flower arrangements

C to protect the tree from disease

D to feed migratory birds

CSZ10336

45 **Many animals depend on plants for**

A shelter.

B pollination.

C seed dispersal.

D sunlight.

CSZ10358

46 **Where is *most* of Earth's water located?**

A glaciers

B lakes

C oceans

D rivers

CSZ10053

47 **Which of the following processes is responsible for changing liquid water into water vapor?**

A photosynthesis

B condensation

C evaporation

D precipitation

CSZ10373

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48 **Above a continent, a warm air mass slowly passes over a cold air mass. As the warm air begins to cool, clouds form. What will *most* likely happen next?**

A Rain will fall.

B Hurricanes will form.

C Lightning will strike.

D Hail will form.

CSZ10148

49 **Why is watering plants and grass in the early morning a way to conserve water?**

A There is always more water in the morning.

B Smaller amounts of water evaporate in the cool morning.

C Water used in the morning can be recycled for afternoon use.

D Grass can absorb water only in the morning.

CSZ10021

50 **Which location on Earth receives the most direct sunlight?**

A the deserts

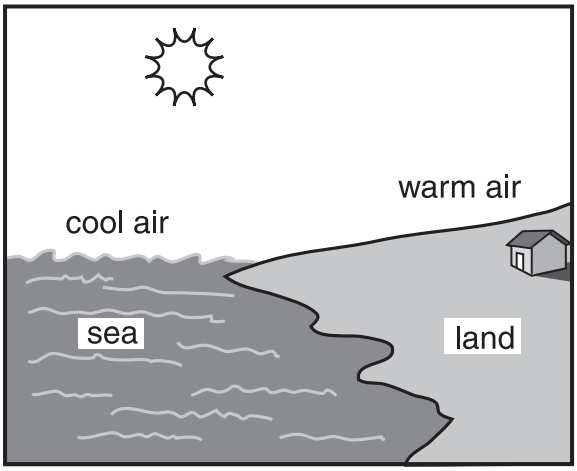
B the South Pole

C the equator

D the Western Hemisphere

CSZ20228

51 **The picture below shows a place where air currents will form due to the uneven heating of Earth.**



In which direction will air currents *most* likely move?

A straight down over the land

B from the land toward the sea

C straight up above the sea

D from the sea toward the land

CSZ10155

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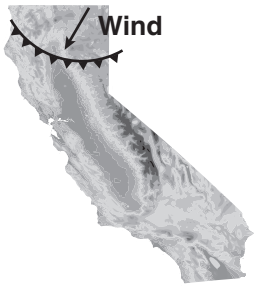
52 **Which of the following systems would *most* likely have the greatest amount of moisture associated with it?**

A

C



B

D

CSZ20229

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53 **Which of the following factors would *most* likely cause a hurricane to decrease in strength?**

A staying over a warm body of water for a long time

B increasing the number of large clouds

C moving over a continent

D moving toward tropical waters

CSZ10022

54 **A city has a temperature of 75 °F, with partly cloudy skies. Weather forecasters are predicting that the air pressure and temperature will drop during the day. Which type of weather is *most* likely for this area in the late afternoon?**

A rainy

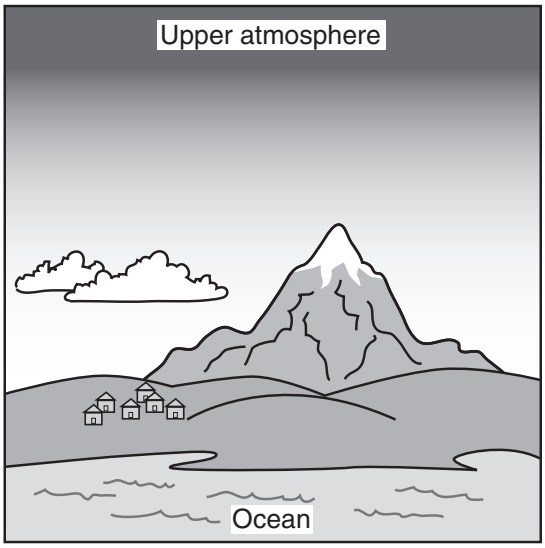
B sunny

C snowing

D hailing

CSZ10256

55 **The diagram below shows a landscape.**



Where in the diagram would the air pressure be the greatest?

A at the beach

B on top of the mountain

C at the bottom of the clouds

D above Earth's atmosphere

CSZ10108

56 **The largest body in our solar system is**

A Earth.

B the Sun.

C Jupiter.

D the Moon.

CSZ20330

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57 **What is at the center of our solar system?**

A a medium planet with an atmosphere

B a star composed of carbon and nitrogen

C a black hole that was once a star

D a star composed of hydrogen and helium

CSZ10081

58 **Which of these revolves around a planet?**

A an asteroid

B a star

C a comet

D a moon

CSZ10100

59 **Gravity is responsible for the**

A orbits of the planets around the Sun.

B rotation of a planet on its axis.

C tilt of Earth's axis.

D phases of the Moon.

CSZ20334

60 **Why are *most* fossils found in sedimentary rocks?**

A Sedimentary rocks are not very old.

B Organisms live only in areas with sedimentary rock.

C Organisms can be preserved in sedimentary rock.

D Sedimentary rocks are found only at the surface of the ground.

CSZ10403

61 **Shale is a sedimentary rock that can be metamorphosed into slate by**

A cementation.

B chemical weathering.

C sedimentation.

D increased pressure.

CSZ20111

62 **A student is trying to identify a mineral that has a nonmetallic luster and is black. It can also be scratched with a fingernail. According to the mineral reference sheet, the unidentified mineral is *most* likely**

A mica.

B magnetite.

C hornblende.

D quartz.

CSZ20414

63 **The chart below shows a part of Mohs hardness scale for minerals.**

Mohs Scale of Hardness

Mineral	Talc	Gypsum	Calcite	Fluorite	Apatite
Hardness	1	2	3	4	5

A student is testing an unknown mineral for hardness. The unknown mineral is tested against fluorite, but neither mineral scratches the other. Which of the following conclusions can the student accurately make?

A The unknown mineral and apatite will not scratch each other.

B The unknown mineral and calcite will not scratch each other.

C The unknown mineral will scratch apatite.

D The unknown mineral will scratch calcite.

CSZ10261

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64

Which process is *most* responsible for the formation of the Grand Canyon?

A scouring by continental glaciers

B erosion by wind and water

C eruptions by explosive volcanoes

D cracking of Earth's crust by earthquakes

CSZ20112

65 **The landform below is a sea arch.**

What is responsible for shaping this arch?

A plate tectonics

B earthquakes

C deposition

D erosion

CSZ10405

66 **How do plants *most* commonly break large rocks into smaller pieces?**

A Plant leaves insulate surrounding rocks from extreme temperatures.

B Plant roots grow into cracks in rocks.

C Seeds from plants fall onto rocks and release acidic compounds.

D Stems of plants surround and squeeze rocks.

CSZ10170

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67 **The freezing and thawing action of water affects a rock by**

A transforming the rock into igneous rock.

B chemically changing the rock.

C gradually breaking down the rock into smaller pieces.

D leaving behind sedimentary particles from evaporated solutions.

CSZ20469

68 **Moving water was the *most* important factor in forming which of these?**

A the Grand Canyon

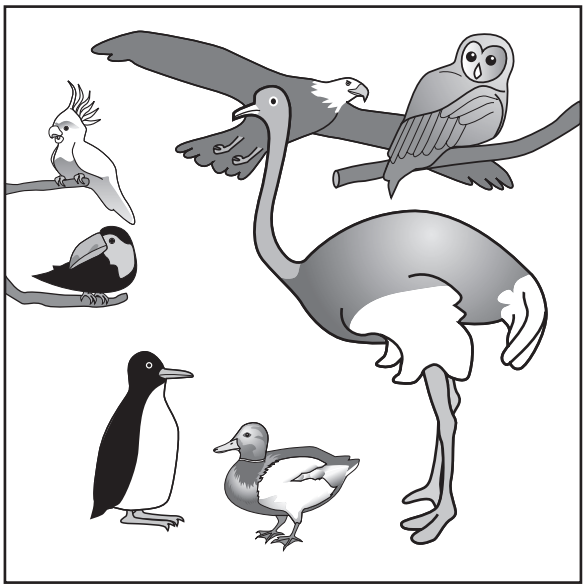
B San Andreas Fault

C the Rocky Mountains

D Mount St. Helens Volcano

CSZ10286

69 **The picture below shows several different birds.**



What characteristic do all birds share?

A They can fly.

B They have feathers.

C They have webbed feet.

D They eat worms.

CSZ10063

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70 **Which of the following questions is testable in a scientific investigation?**

A Are dogs better pets than cats?

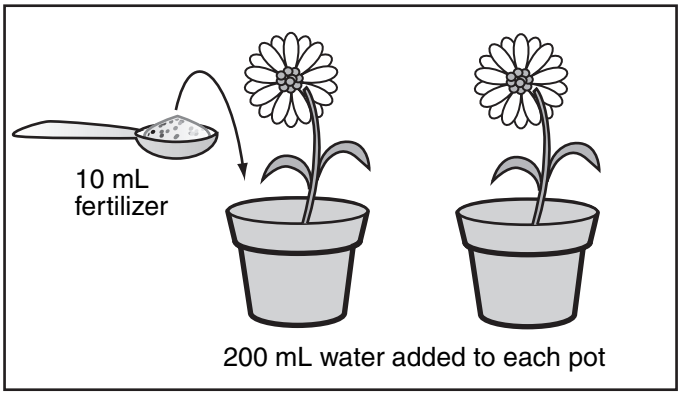
B Are dogs happy when they are walked?

C Are cats more active at night than during the day?

D Are cats easier to take care of than dogs?

CSZ10003

71 **A student will measure and record the growth of two flowering plants every other day for 10 days.**



According to the diagram, which question is being tested?

A Do flowering plants grow better when watered with salt water?

B How much fertilizer do flowering plants need?

C Does fertilizer added to the soil lead to taller flowering plants?

D How tall do flowering plants grow?

CSZ10046

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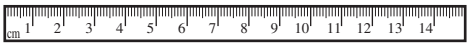
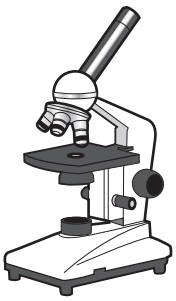
72 **A student wants to see the xylem of a plant stem. Which instrument should the student use?**

A

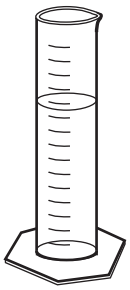


C

B



D



CSZ10159

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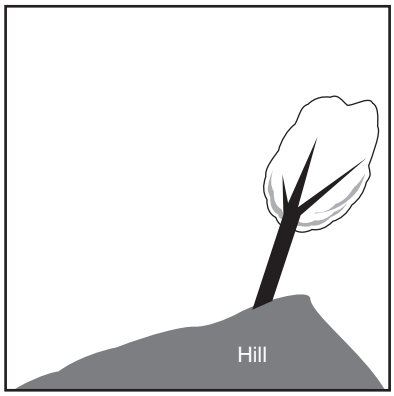
73 **A group of students observed the following tree while hiking through a hilly area.**



What is the *most* likely cause for the angle of growth of this tree?

A The tree is reaching toward the afternoon sunlight.

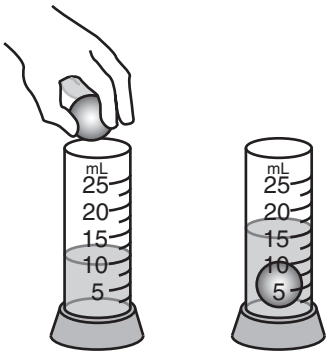
B Water rolling down the hill uprooted the tree.

C Large rocks hit the tree when they rolled down the hill.

D Strong uphill winds have pushed against the tree.

CSZ10205

74 **A student added a small ball to a graduated cylinder containing 10 milliliters of water.**



What is the volume of the ball?

A 5 mL

B 10 mL

C 15 mL

D 20 mL

CSZ10207

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75 **The chart below shows the results of an experiment designed to study how exercise affects heart rate.**

Activity Stage	Heart Rate of Person A (beats per min.)	Heart Rate of Person B (beats per min.)	Heart Rate of Person C (beats per min.)
Before exercise	75	62	70
After exercise	120	110	130

Which of the following statements is the *best* conclusion for this experiment?

A Exercise triples a person's heart rate.

B Exercise decreases a person's heart rate.

C Heart rate is not affected by exercise.

D Heart rate is increased by exercise.

CSZ10043

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Question Number	Correct Answer	Standard	Year of Release
1	*D*	5PS1.A	2005
2	*D*	5PS1.A	2007
3	*D*	5PS1.B	2007
4	*D*	5PS1.C	2004
5	*C*	5PS1.C	2006
6	*A*	5PS1.C	2008
7	*D*	5PS1.E	2007
8	*C*	5PS1.E	2004
9	*D*	5PS1.F	2006
10	*C*	5PS1.G	2006
11	*D*	5PS1.H	2005
12	*D*	5PS1.H	2008
13	*C*	5PS1.I	2007
14	*C*	4PS1.A	2005
15	*B*	4PS1.A	2008
16	*A*	4PS1.C	2006
17	*D*	4PS1.C	2008
18	*A*	4PS1.E	2006
19	*D*	4PS1.F	2004
20	*D*	4PS1.F	2005
21	*D*	4PS1.G	2004
22	*B*	4PS1.G	2007
23	*B*	5LS2.A	2006
24	*A*	5LS2.B	2007
25	*B*	5LS2.B	2008
26	*B*	5LS2.C	2007
27	*D*	5LS2.C	2004
28	*C*	5LS2.C	2006
29	*C*	5LS2.D	2005
30	*C*	5LS2.E	2005
31	*C*	5LS2.F	2004
32	*C*	5LS2.F	2008
33	*A*	5LS2.G	2005
34	*A*	5LS2.G	2008
35	*C*	4LS2.B	2005

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Question Number	Correct Answer	Standard	Year of Release
36	*C*	4LS2.B	2007
37	*B*	4LS2.C	2007
38	*C*	4LS2.C	2008
39	*D*	4LS3.A	2004
40	*C*	4LS3.A	2008
41	*D*	4LS3.B	2005
42	*B*	4LS3.B	2006
43	*B*	4LS3.C	2004
44	*A*	4LS3.C	2007
45	*A*	4LS3.C	2006
46	*C*	5ES3.A	2004
47	*C*	5ES3.B	2006
48	*A*	5ES3.C	2007
49	*B*	5ES3.D	2005
50	*C*	5ES4.A	2007
51	*D*	5ES4.A	2004
52	*A*	5ES4.B	2008
53	*C*	5ES4.C	2008
54	*A*	5ES4.D	2006
55	*A*	5ES4.E	2007
56	*B*	5ES5.A	2005
57	*D*	5ES5.A	2008
58	*D*	5ES5.B	2004
59	*A*	5ES5.C	2007
60	*C*	4ES4.A	2004
61	*D*	4ES4.A	2008
62	*A*	4ES4.B	2004
63	*D*	4ES4.B	2006
64	*B*	4ES5.A	2007
65	*D*	4ES5.A	2006
66	*B*	4ES5.B	2005
67	*C*	4ES5.B	2008
68	*A*	4ES5.C	2005
69	*B*	5IE6.A	2005
70	*C*	5IE6.B	2004

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Question Number	Correct Answer	Standard	Year of Release
71	*C*	5IE6.B	2006
72	*B*	5IE6.F	2008
73	*D*	4IE6.A	2005
74	*A*	4IE6.B	2006
75	*D*	4IE6.D	2004

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Grade 5 Science Reference Sheet

Key

11	Atomic number
Na	Element symbol
Sodium	Element name

- Metals
- Metalloids (semimetals)
- Nonmetals

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	1 H Hydrogen																	2 He Helium
2	3 Li Lithium	4 Be Beryllium											5 B Boron	6 C Carbon	7 N Nitrogen	8 O Oxygen	9 F Fluorine	10 Ne Neon
3	11 Na Sodium	12 Mg Magnesium											13 Al Aluminum	14 Si Silicon	15 P Phosphorus	16 S Sulfur	17 Cl Chlorine	18 Ar Argon
4	19 K Potassium	20 Ca Calcium	21 Sc Scandium	22 Ti Titanium	23 V Vanadium	24 Cr Chromium	25 Mn Manganese	26 Fe Iron	27 Co Cobalt	28 Ni Nickel	29 Cu Copper	30 Zn Zinc	31 Ga Gallium	32 Ge Germanium	33 As Arsenic	34 Se Selenium	35 Br Bromine	36 Kr Krypton
5	37 Rb Rubidium	38 Sr Strontium	39 Y Yttrium	40 Zr Zirconium	41 Nb Niobium	42 Mo Molybdenum	43 Tc Technetium	44 Ru Ruthenium	45 Rh Rhodium	46 Pd Palladium	47 Ag Silver	48 Cd Cadmium	49 In Indium	50 Sn Tin	51 Sb Antimony	52 Te Tellurium	53 I Iodine	54 Xe Xenon
6	55 Cs Cesium	56 Ba Barium	57 La Lanthanum	72 Hf Hafnium	73 Ta Tantalum	74 W Tungsten	75 Re Rhenium	76 Os Osmium	77 Ir Iridium	78 Pt Platinum	79 Au Gold	80 Hg Mercury	81 Tl Thallium	82 Pb Lead	83 Bi Bismuth	84 Po Polonium	85 At Astatine	86 Rn Radon
7	87 Fr Francium	88 Ra Radium	89 Ac Actinium	104 Rf Rutherfordium	105 Db Dubnium	106 Sg Seaborgium	107 Bh Bohrium	108 Hs Hassium	109 Mt Meitnerium									

58 Ce Cerium	59 Pr Praseodymium	60 Nd Neodymium	61 Pm Promethium	62 Sm Samarium	63 Eu Europium	64 Gd Gadolinium	65 Tb Terbium	66 Dy Dysprosium	67 Ho Holmium	68 Er Erbium	69 Tm Thulium	70 Yb Ytterbium	71 Lu Lutetium
90 Th Thorium	91 Pa Protactinium	92 U Uranium	93 Np Neptunium	94 Pu Plutonium	95 Am Americium	96 Cm Curium	97 Bk Berkelium	98 Cf Californium	99 Es Einsteinium	100 Fm Fermium	101 Md Mendelevium	102 No Nobelium	103 Lr Lawrencium

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Turn over for Mineral Information.

Grade 5 Science Reference Sheet

Mineral Identification Table

Mineral	Hardness	Luster	Streak	Color	Other
Calcite	3	nonmetallic	white	colorless, white	bubbles when acid is placed on it
Feldspar	6	nonmetallic	none	colorless, beige, pink	
Galena	2.5 – 3	metallic	gray	lead-gray	heavy for its size
Gold	2.5 – 3	metallic	golden yellow	yellow	used for jewelry
Graphite	1 – 2	metallic	black	gray to black	feels greasy
Hematite	5 – 6.5	metallic or nonmetallic	reddish brown	silver-gray or red	
Hornblende	5 – 6	nonmetallic	none	dark green to black	
Magnetite	6	metallic	black	black	magnetic
Mica	2 – 2.5	nonmetallic	none	dark brown, black or silver-white	flakes when peeled
Pyrite	6 – 6.5	metallic	greenish black	brassy yellow	called “fool’s gold”
Quartz	7	nonmetallic	none	colorless, white, rose, smoky, purple, brown	
Talc	1	nonmetallic	white	white, greenish to gray	feels greasy

Mohs Hardness Scale

Mineral	Hardness
Talc	1
Gypsum	2
	2.5 Fingernail
Calcite	3
	3.2 Copper Penny
Fluorite	4
Apatite	5
	5.5 Glass
Feldspar	6
	6.5 Steel File
Quartz	7
Topaz	8
Corundum	9
Diamond	10

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