Los Angeles Unified School District

Science Grade 4

Assessment OF Learning, California Standards Tests:

Provide summative, end-of-year or end-of-course results that document student achievement

GRADE 5 CST SCIENCE BLUEPRINT	# of Items	%
Physical Science	18	30%
Physical Sciences – Grade 5	11	
1. Elements and their combinations account for all the varied types of matter in the world.		
a. …during chemical reactions the atoms rearrange	1	
b. …all matter is made of atoms	1	
c. …metals have properties in common	1 or 2*	
d. …each element is made of one kind of atom	1	
e. …instruments can create images of atoms and molecules	1	
f. …differences in properties are used to identify compounds	2	
g. …properties of solid, liquid, and gaseous substances	2	
h. …organisms and materials are composed of a few elements	1	
i. …the common properties of salts, such as sodium chloride	0 or 1*	
Physical Sciences – Grade 4	7	
1. Electricity and magnetism are related effects		
a. …how to design and build simple series and parallel circuits	1	
b. …how to build a simple compass and use it	1	
c. …electric currents produce magnetic fields	1	
d. …the role of electromagnets in motors and generators	1	
e. …electrically charged objects attract or repel each other	1	
f. …magnets have two poles	1	
g. …electrical energy can be converted to heat, light, and motion	1	
Life Science	18	30%
Life Sciences – Grade 5	9	
2. Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials.		
a. …many multicellular organisms have specialized structures	1	
b. …blood circulates through the heart, lungs, and body	2	
c. …sequential steps of digestion and system structures	2	
d. …the role of the kidney in removing cellular waste from blood	1	
e. …how sugar, water, and minerals are transported	1	
f. …plants use carbon dioxide (CO_2) and energy from sunlight	1	
g. …plant and animal cells break down sugar to obtain energy	1	
Life Sciences – Grade 4	9	
2. All organisms need energy and matter to live and grow.		
a. …plants as the primary source of matter, energy in food chains	1	
b. …producers and consumers are related in food chains	2	
c. …decomposers recycle matter from dead plants and animals	1	
3. Living organisms depend on one another and on their environment for survival.		
a. …ecosystems can be characterized by their components	1	
b. …some kinds of plants and animals survive well, others don't	2	
c. …many plants depend on animals for pollination	1	
d. …most microorganisms do not cause disease	1	
Earth Science	18	30%
Earth Science – Grade 5	11	
3. Water on Earth moves between the oceans and land through the processes of evaporation and condensation.		
a. …most of Earth's water is present as salt water in the oceans	0 or 1*	
b. …when liquid water evaporates, it turns into water vapor	1	
c. …water vapor in the air moves and forms clouds, rain, snow	1	
d. …the amount of fresh water is limited	1	
4. Energy from the Sun heats Earth unevenly, causing air movements that result in changing weather patterns.		
a. …uneven heating of Earth causes air movements	1	
b. …the influence that the ocean has on the weather	1	
c. …the causes and effects of different types of severe weather	1	
d. …how to use weather maps and data to predict local weather	1	
e. …the Earth's atmosphere exerts a pressure	1	
5. The solar system consists of planets and other bodies that orbit the Sun in predictable paths.		
a. …the Sun is the central body in the solar system	0 or 1*	
b. …the components of the solar system	1	
c. …how the path of a planet around the Sun is determined	1	
Earth Science – Grade 4	7	
4. The properties of rocks and minerals reflect the processes that formed them.		
a. …differentiate among rocks by referring to their properties	1	
b. …identify common minerals by using a table of properties	1	
5. Waves, wind, water, and ice shape and reshape Earth's land surface.		
a. …changes in the earth are due to slow and rapid processes	2	
b. …natural processes cause rocks to break down	1	
c. …moving water erodes landforms, reshaping the land	2	
Investigation and Experimentation	6	10%
Investigation and Experimentation – Grade 5	4	
Investigation and Experimentation – Grade 4	2	
TOTALGRADE 5	60	100%

* Alternate years

NOTE: Non-assessed or embedded standards are omitted.

Assessment FOR Learning, LAUSD Periodic Assessments:

Provide formative, ongoing data which can be used to increase student achievement

PHYSICAL SCIENCE ASSESSMENT

GRADE 4 CONTENT STANDARDS	# of Items
1. Electricity and magnetism are related effects	20
a. …how to design and build simple series and parallel circuits	3
b. …how to build a simple compass and use it	3
c. …electric currents produce magnetic fields	3
d. …the role of electromagnets in motors and generators	3
e. …electrically charged objects attract or repel each other	1
f. …magnets have two poles	4
g. …electrical energy can be converted to heat, light, and motion	3
MULTIPLE CHOICE ITEMS	20
CONSTRUCTED RESPONSE ITEM	4 pts
1.a. …how to design and build simple series and parallel circuits 1.g. …electrical energy can be converted to heat, light, and motion	

LIFE SCIENCE ASSESSMENT

GRADE 4 CONTENT STANDARDS	# of Items
2. All organisms need energy and matter to live and grow.	9
a. …plants as the primary source of matter, energy in food chains	2
b. …producers and consumers are related in food chains	4
c. …decomposers recycle matter from dead plants and animals	3
3. Living organisms depend on one another and on their environment for survival.	11
a. …ecosystems can be characterized by their components	4
b. …some kinds of plants and animals survive well, others don't	3
c. …many plants depend on animals for pollination	2
d. …most microorganisms do not cause disease	2
MULTIPLE CHOICE ITEMS	20
CONSTRUCTED RESPONSE ITEM	4 pts
2.a. …plants as the primary source of matter, energy in food chains 2.b. …producers and consumers are related in food chains	

EARTH SCIENCE ASSESSMENT

GRADE 4 CONTENT STANDARDS	# of Items
4. The properties of rocks and minerals reflect the processes that formed them.	9
a. …differentiate among rocks by referring to their properties	4
b. … identify common minerals by using a table of properties	5
5. Waves, wind, water, and ice shape and reshape Earth's land surface.	11
a. …changes in the earth are due to slow and rapid processes	4
b. …natural processes cause rocks to break down	3
c. …moving water erodes landforms, reshaping the land	4
MULTIPLE CHOICE ITEMS	20
CONSTRUCTED RESPONSE ITEM	4 pts
5.a. …differentiate among rocks by referring to their properties 5.b. …natural processes cause rocks to break down	

Los Angeles Unified School District

Science Grade 5

Assessment OF Learning, California Standards Tests:

Provide summative, end-of-year or end-of-course results that document student achievement

GRADE 5 CST BLUEPRINT	# of Items	%
Physical Sciences	18	30%
Physical Sciences – Grade 5	11	
1. Elements and their combinations account for all the varied types of matter in the world.		
a. …during chemical reactions the atoms rearrange	1	
b. …all matter is made of atoms	1	
c. …metals have properties in common	1 or 2*	
d. …each element is made of one kind of atom	1	
e. …instruments can create images of atoms and molecules	1	
f. …differences in properties are used to identify compounds	2	
g. …properties of solid, liquid, and gaseous substances	2	
h. …organisms and materials are composed of a few elements	1	
i. …the common properties of salts, such as sodium chloride	0 or 1*	
Physical Sciences – Grade 4	7	
1. Electricity and magnetism are related effects		
a. …how to design and build simple series and parallel circuits	1	
b. …how to build a simple compass and use it	1	
c. …electric currents produce magnetic fields	1	
d. …the role of electromagnets in motors and generators	1	
e. …electrically charged objects attract or repel each other	1	
f. …magnets have two poles	1	
g. …electrical energy can be converted to heat, light, and motion	1	
Life Science	18	30%
Life Sciences – Grade 5	9	
2. Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials.		
a. …many multicellular organisms have specialized structures	1	
b. …blood circulates through the heart, lungs, and body	2	
c. …sequential steps of digestion and system structures	2	
d. …the role of the kidney in removing cellular waste from blood	1	
e. …how sugar, water, and minerals are transported	1	
f. …plants use carbon dioxide (CO_2) and energy from sunlight	1	
g. …plant and animal cells break down sugar to obtain energy	1	
Life Sciences – Grade 4	9	
2. All organisms need energy and matter to live and grow.		
a. …plants as the primary source of matter, energy in food chains	1	
b. …producers and consumers are related in food chains	2	
c. …decomposers recycle matter from dead plants and animals	1	
3. Living organisms depend on one another and on their environment for survival.		
a. …ecosystems can be characterized by their components	1	
b. …some kinds of plants and animals survive well, others don't	2	
c. …many plants depend on animals for pollination	1	
d. …most microorganisms do not cause disease	1	
Earth Science	18	30%
Earth Science – Grade 5	11	
3. Water on Earth moves between the oceans and land through the processes of evaporation and condensation.		
a. …most of Earth's water is present as salt water in the oceans	0 or 1*	
b. …when liquid water evaporates, it turns into water vapor	1	
c. …water vapor in the air moves and forms clouds, rain, snow	1	
d. …the amount of fresh water is limited	1	
4. Energy from the Sun heats Earth unevenly, causing air movements that result in changing weather patterns.		
a. …uneven heating of Earth causes air movements	1	
b. …the influence that the ocean has on the weather	1	
c. …the causes and effects of different types of severe weather	1	
d. …how to use weather maps and data to predict local weather	1	
e. …the Earth's atmosphere exerts a pressure	1	
5. The solar system consists of planets and other bodies that orbit the Sun in predictable paths.		
a. …the Sun is the central body in the solar system	0 or 1*	
b. …the components of the solar system	1	
c. …how the path of a planet around the Sun is determined	1	
Earth Science – Grade 4	7	
4. The properties of rocks and minerals reflect the processes that formed them.		
a. …differentiate among rocks by referring to their properties	1	
b. …identify common minerals by using a table of properties	1	
5. Waves, wind, water, and ice shape and reshape Earth's land surface.		
a. …changes in the earth are due to slow and rapid processes	2	
b. …natural processes cause rocks to break down	1	
c. …moving water erodes landforms, reshaping the land	2	
Investigation and Experimentation	6	10%
Investigation and Experimentation – Grade 5	4	
Investigation and Experimentation – Grade 4	2	
TOTALGRADE 5	60	100%

* Alternate years

NOTE: Non-assessed or embedded standards are omitted.

Assessment FOR Learning, LAUSD Periodic Assessments:

Provide formative, ongoing data which can be used to increase student achievement

PHYSICAL SCIENCE ASSESSMENT

GRADE 5 CONTENT STANDARDS	# of Items
1. Elements and their combinations account for all the varied types of matter in the world.	20
a. …during chemical reactions the atoms rearrange	3
b. …all matter is made of atoms	2
c. …metals have properties in common	2
d. …each element is made of one kind of atom	2
e. …instruments can create images of atoms and molecules	1
f. …differences in properties are used to identify compounds	3
g. …properties of solid, liquid, and gaseous substances	3
h. …organisms and materials are composed of a few elements	2
i. …the common properties of salts, such as sodium chloride	2
MULTIPLE CHOICE ITEMS	20
CONSTRUCTED RESPONSE ITEM	4 pts
1.a. …during chemical reactions the atoms rearrange 1.b. …all matter is made of atoms 1.f. …differences in properties are used to identify compounds	

LIFE SCIENCE ASSESSMENT

GRADE 5 CONTENT STANDARDS	# of Items
2. Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials.	20
a. …many multicellular organisms have specialized structures	3
b. …blood circulates through the heart, lungs, and body	3
c. …sequential steps of digestion and system structures	3
d. …the role of the kidney in removing cellular waste from blood	2
e. …how sugar, water, and minerals are transported	3
f. …plants use carbon dioxide (CO_2) and energy from sunlight	3
g. …plant and animal cells break down sugar to obtain energy	3
MULTIPLE CHOICE ITEMS	20
CONSTRUCTED RESPONSE ITEM	4 pts
2.a. …many multicellular organisms have specialized structures 2.c. …sequential steps of digestion and system structures	

EARTH SCIENCE ASSESSMENT

GRADE 5 CONTENT STANDARDS	# of Items
3. Water on Earth moves between the oceans and land through the processes of evaporation and condensation.	8
a. …most of Earth's water is present as salt water in the oceans	2
b. …when liquid water evaporates, it turns into water vapor	2
c. …water vapor in the air moves and forms clouds, rain, snow	2
d. …the amount of fresh water is limited	1
e. …the origin of the water used by their local communities	1
4. Energy from the Sun heats Earth unevenly, causing air movements that result in changing weather patterns.	9
a. …uneven heating of Earth causes air movements	2
b. …the influence that the ocean has on the weather	1
c. …the causes and effects of different types of severe weather	1
d. …how to use weather maps and data to predict local weather	3
e. …the Earth's atmosphere exerts a pressure	2
5. The solar system consists of planets and other bodies that orbit the Sun in predictable paths.	3
a. …the Sun is the central body in the solar system	1
b. …the components of the solar system	1
c. …how the path of a planet around the Sun is determined	1
MULTIPLE CHOICE ITEMS	20
CONSTRUCTED RESPONSE ITEM	4 pts
4.a. …uneven heating of Earth causes air movements 4.b. …the influence that the ocean has on the weather 4.d. …how to use weather maps and data to predict local weather	

NOTE: Unshaded standards are not separately assessed on the CST.

Los Angeles Unified School District

Science Grade 8

Assessment OF Learning, California Standards Tests:

Provide summative, end-of-year or end-of-course results that document student achievement

GRADE 8 SCIENCE BLUEPRINT	# of Items	%
Motion	8	13%
1. The velocity of an object is the rate of change of its position.		
a. …position is defined in relation to some choice of a standard…	1	
b. …average speed is the total distance traveled divided by the total time elapsed and that the speed of an object along the path…	1	
c. …solve problems involving distance, time, and average speed.	2	
d. …the velocity of an object must be described by specifying both the direction and the speed of the object.	1	
e. …changes in velocity may be due to changes in speed, direction, or both.	1	
f. …interpret graphs of position versus time and graphs of speed…	2	
Forces	8	13%
2. Unbalanced forces cause changes in velocity.		
a. …a force has both direction and magnitude.	1	
b. …when an object is subject to two or more forces at once, the result is the cumulative effect of all the forces.	1	
c. …when the forces on an object are balanced, the motion of the object does not change.	1	
d. …identify separately the two or more forces that are acting on a single static object, including gravity, elastic forces due to…	2	
e. …when the forces on an object are unbalanced, the object will…	1	
f. …the greater the mass of an object, the more force is needed to…	1	
g. …the role of gravity in forming and maintaining the shapes of planets, stars, and the solar system.	1	
Structure of Matter	9	15%
3. Each of the more than 100 elements of matter has distinct properties and a distinct atomic structure. All forms of matter…		
a. …the structure of the atom and know it is composed of protons…	2	
b. …compounds are formed by combining two or more different…	2	
c. …atoms and molecules form solids by building up repeating patterns, such as the crystal structure of NaCl or long-chain…	1	
d. …the states of matter depend on molecular motion.	1	
e. …in solids the atoms are closely locked in position and can only…	2	
f. …use the periodic table to identify elements in simple compounds.	1	
Earth in the Solar System (Earth Science)	7	12%
4. The structure and composition of the universe can be learned from studying stars and galaxies and their evolution.…		
a. …galaxies are clusters of billions of stars and may have different shapes.	1	
b. …the Sun is one of many stars in the Milky Way galaxy and that stars may differ in size, temperature, and color.	2	
c. …use astronomical units and light years as measures of distances between the Sun, stars, and Earth.	1	
d. …stars are the source of light for all bright objects in outer space and the Moon and planets shine by reflected sunlight, not by…	1	
e. …the appearance, general composition, relative position and size, and motion of objects in the solar system, including planets…	2	
Reactions	7	12%
5. Chemical reactions are processes in which atoms are rearranged into different combinations of molecules.		
a. …reactant atoms and molecules interact to form products with…	1	
b. …the idea of atoms explains the conservation of matter: In chemical reactions the number of atoms stays the same no…	2	
c. …chemical reactions usually liberate heat or absorb heat.	1	
d. …physical processes include freezing and boiling, in which a material changes form with no chemical reaction.	2	
e. …determine whether a solution is acidic, basic, or neutral.	1	
Chemistry of Living Systems (Life Science)	3	5%
6. Principles of chemistry underlie the functioning of biological systems.		
a. …carbon, because of its ability to combine in many ways with itself and other elements, has a central role in the chemistry…	1	
b. …that living organisms are made of molecules consisting largely of carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulfur.	1	
c. …that living organisms have many different kinds of molecules…	1	
Periodic Table	7	12%
7. The organization of the periodic table is based on the properties of the elements and reflects the structure of atoms.		
a. …identify regions corresponding to metals, nonmetals, and inert gases.	2	
b. …each element has a specific number of protons in the nucleus…	2	
c. …substances can be classified by their properties, including their melting temperature, density, hardness, and thermal and…	3	
Density and Buoyancy	5	8%
8. All objects experience a buoyant force when immersed in a fluid.		
a. …density is mass per unit volume.	1	
b. …calculate the density of substances (regular and irregular solids and liquids) from measurements of mass and volume.	2	
c. …the buoyant force on an object in a fluid is an upward force equal to the weight of the fluid the object has displaced.	1	
d. …predict whether an object will float or sink.	1	
Investigation and Experimentation	6	10%
Total Grade 8	60	100%

NOTE: Non-assessed or embedded standards are omitted.

Assessment FOR Learning, LAUSD Periodic Assessments:

Provide formative, ongoing data which can be used to increase student achievement

PERIODIC ASSESSMENT #1

SCIENCE 8 CONTENT STANDARDS	# of Items
Motion	11
1a…position is defined in relation to some choice of a standard…	1
1b…average speed is the total distance traveled divided by the total time elapsed and that the speed of an object along the path…	2
1c…solve problems involving distance, time, and average speed.	2
1d…the velocity of an object must be described by specifying both the direction and the speed of the object.	2
1e…changes in velocity may be due to changes in speed, direction…	2
1f…interpret graphs of position versus time and graphs of speed…	2
Forces	11
2a…a force has both direction and magnitude.	2
2b…when an object is subject to two or more forces at once, the result is the cumulative effect of all the forces.	2
2c…when the forces on an object are balanced, the motion of the object does not change.	2
2d…identify separately the two or more forces that are acting on a single static object, including gravity, elastic forces due to…	2
2e…when the forces on an object are unbalanced, the object will…	2
2f…the greater the mass of an object, the more force is needed to…	1
Density and Buoyancy	8
8a…density is mass per unit volume.	2
8b…calculate the density of substances from measurements…	2
8c…the buoyant force on an object in a fluid is an upward force equal to the weight of the fluid the object has displaced.	2
8d…predict whether an object will float or sink.	2
MULTIPLE CHOICE ITEMS	30
CONSTRUCTED RESPONSE ITEM	4 pts
1c…solve problems involving distance, time, and average speed. 1f…interpret graphs of position versus time and graphs of speed…	

PERIODIC ASSESSMENT #2

SCIENCE 8 CONTENT STANDARDS	# of Items
Structure of Matter	12
3a…the structure of the atom and know it is composed of protons…	1
3b…compounds are formed by combining two or more different…	2
3c…atoms and molecules form solids by building up repeating patterns, such as the crystal structure of NaCl or long-chain…	2
3d…the states of matter depend on molecular motion.	2
3e…in solids the atoms are closely locked in position and can only…	3
3f…use the periodic table to identify elements in simple compounds.	2
Reactions	11
5a…reactant atoms and molecules interact to form products with…	2
5b…the idea of atoms explains the conservation of matter: In…	3
5c…chemical reactions usually liberate heat or absorb heat.	2
5d…physical processes include freezing and boiling, in which a material changes form with no chemical reaction.	2
5e…determine whether a solution is acidic, basic, or neutral.	2
Periodic Table	7
7a…identify regions corresponding to metals, nonmetals, and inert…	2
7b…each element has a specific number of protons in the nucleus…	2
7c…substances can be classified by their properties, including their melting temperature, density, hardness, and thermal and…	3
MULTIPLE CHOICE ITEMS	30
CONSTRUCTED RESPONSE ITEM	4 pts
5b…the idea of atoms explains the conservation of matter: In chemical… 5c…chemical reactions usually liberate heat or absorb heat.	

Los Angeles Unified School District

Science Grade 8

Assessment OF Learning, California Standards Tests:

Provide summative, end-of-year or end-of-course results that document student achievement

GRADE 8 SCIENCE BLUEPRINT	# of Items	%
Motion	8	13%
1. The velocity of an object is the rate of change of its position.		
a. …position is defined in relation to some choice of a standard…	1	
b. …average speed is the total distance traveled divided by the total time elapsed and that the speed of an object along the path…	1	
c. …solve problems involving distance, time, and average speed.	2	
d. …the velocity of an object must be described by specifying both the direction and the speed of the object.	1	
e. …changes in velocity may be due to changes in speed, direction, or both.	1	
f. …interpret graphs of position versus time and graphs of speed…	2	
Forces	8	13%
2. Unbalanced forces cause changes in velocity.		
a. …a force has both direction and magnitude.	1	
b. …when an object is subject to two or more forces at once, the result is the cumulative effect of all the forces.	1	
c. …when the forces on an object are balanced, the motion of the object does not change.	1	
d. …identify separately the two or more forces that are acting on a single static object, including gravity, elastic forces due to…	2	
e. …when the forces on an object are unbalanced, the object will…	1	
f. …the greater the mass of an object, the more force is needed to…	1	
g. …the role of gravity in forming and maintaining the shapes of planets, stars, and the solar system.	1	
Structure of Matter	9	15%
3. Each of the more than 100 elements of matter has distinct properties and a distinct atomic structure. All forms of matter…		
a. …the structure of the atom and know it is composed of protons…	2	
b. …compounds are formed by combining two or more different…	2	
c. …atoms and molecules form solids by building up repeating patterns, such as the crystal structure of NaCl or long-chain…	1	
d. …the states of matter depend on molecular motion.	1	
e. …in solids the atoms are closely locked in position and can only…	2	
f. …use the periodic table to identify elements in simple compounds.	1	
Earth in the Solar System (Earth Science)	7	12%
4. The structure and composition of the universe can be learned from studying stars and galaxies and their evolution.…		
a. …galaxies are clusters of billions of stars and may have different shapes.	1	
b. …the Sun is one of many stars in the Milky Way galaxy and that stars may differ in size, temperature, and color.	2	
c. …use astronomical units and light years as measures of distances between the Sun, stars, and Earth.	1	
d. …stars are the source of light for all bright objects in outer space and the Moon and planets shine by reflected sunlight, not by…	1	
e. …the appearance, general composition, relative position and size, and motion of objects in the solar system, including planets…	2	
Reactions	7	12%
5. Chemical reactions are processes in which atoms are rearranged into different combinations of molecules.		
a. …reactant atoms and molecules interact to form products with…	1	
b. …the idea of atoms explains the conservation of matter: In chemical reactions the number of atoms stays the same no…	2	
c. …chemical reactions usually liberate heat or absorb heat.	1	
d. …physical processes include freezing and boiling, in which a material changes form with no chemical reaction.	2	
e. …determine whether a solution is acidic, basic, or neutral.	1	
Chemistry of Living Systems (Life Science)	3	5%
6. Principles of chemistry underlie the functioning of biological systems.		
a. …carbon, because of its ability to combine in many ways with itself and other elements, has a central role in the chemistry…	1	
b. …that living organisms are made of molecules consisting largely of carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulfur.	1	
c. …that living organisms have many different kinds of molecules…	1	
Periodic Table	7	12%
7. The organization of the periodic table is based on the properties of the elements and reflects the structure of atoms.		
a. …identify regions corresponding to metals, nonmetals, and inert gases.	2	
b. …each element has a specific number of protons in the nucleus…	2	
c. …substances can be classified by their properties, including their melting temperature, density, hardness, and thermal and…	3	
Density and Buoyancy	5	8%
8. All objects experience a buoyant force when immersed in a fluid.		
a. …density is mass per unit volume.	1	
b. …calculate the density of substances (regular and irregular solids and liquids) from measurements of mass and volume.	2	
c. …the buoyant force on an object in a fluid is an upward force equal to the weight of the fluid the object has displaced.	1	
d. …predict whether an object will float or sink.	1	
Investigation and Experimentation	6	10%
Total Grade 8	60	100%

NOTE: Non-assessed or embedded standards are omitted.

Assessment FOR Learning, LAUSD Periodic Assessments:

Provide formative, ongoing data which can be used to increase student achievement

PERIODIC ASSESSMENT #3

SCIENCE 8 CONTENT STANDARDS	# of Items
Motion	2
1b…average speed is the total distance traveled divided by the total time elapsed and that the speed of an object along the path…	2
Forces	5
2e…when the forces on an object are unbalanced, the object will…	1
2g…the role of gravity in forming and maintaining the shapes of planets, stars, and the solar system	4
Structure of Matter	2
3d…the states of matter depend on molecular motion	1
3e…in solids the atoms are closely locked in position and can only…	1
Earth in the Solar System (Earth Science)	17
4a…galaxies are clusters of billions of stars and may have different shapes.	3
4b…the Sun is one of many stars in the Milky Way galaxy and…	4
4c…use astronomical units and light years as measures of distances between the Sun, stars, and Earth.	3
4d…stars are the source of light for all bright objects in outer space and the Moon and planets shine by reflected sunlight, not by…	3
4e…the appearance, general composition, relative position and size, and motion of objects in the solar system, including planets…	4
Reactions	2
5c…chemical reactions usually liberate heat or absorb heat.	1
5d…physical processes include freezing and boiling, in which a…	1
Chemistry of Living Systems (Life Science)	9
6a…carbon, because of its ability to combine in many ways with itself and other elements, has a central role in the chemistry…	3
6b…that living organisms are made of molecules consisting largely of carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulfur.	3
6c…that living organisms have many different kinds of molecules…	3
Periodic Table	1
7b…each element has a specific number of protons in the nucleus…	1
Density and Buoyancy	2
8b…calculate the density of substances from measurements of…	1
8c…the buoyant force on an object in a fluid is an upward force…	1
TOTAL MULTIPLE CHOICE ITEMS	40
CONSTRUCTED RESPONSE ITEM	4 pts
4e…the appearance, general composition, relative position and size, and motion of objects in the solar system, including planets…	

Los Angeles Unified School District

Biology

Assessment OF Learning
California Standards Tests:

Provide summative, end-of-year or end-of-course results that document student achievement

BIOLOGY/LIFE SCIENCES CST BLUEPRINT*	# of Items	%
Cell Biology	9	15%
1. The fundamental life processes of plants and animals…		
a. …cells are enclosed within semipermeable membranes…	1	
b. …enzymes are proteins that catalyze biochemical reactions…	1 or 2**	
c. …how prokaryotic cells, eukaryotic cells, and viruses differ…	1 or 2**	
d. …the central dogma of molecular biology…	1	
e. …the role of the endoplasmic reticulum and Golgi apparatus…	1	
f. …usable energy is captured from sunlight by chloroplasts…	1	
g. …the role of the mitochondria…	1	
h. … macromolecules in cells and organisms are synthesized…	1	
Genetics	19	32%
2. Mutation and sexual reproduction lead to genetic variation…		
a. …meiosis is an early step in sexual reproduction…	1	
b. …only certain cells in a multicellular organism undergo meiosis.	1	
c. …random chromosome segregation explains the probability…	1	
d. …new combinations of alleles may be generated in a zygote…	1	
e. …why approximately half of an individual's DNA sequence…	1	
f. …the role of chromosomes in determining an individual's sex.	1	
g. …how to predict possible combinations of alleles in a zygote…	1	
3. A multicellular organism develops from a single zygote…		
a. …how to predict the probable outcome of phenotypes…	1 or 2**	
b. …the genetic basis for Mendel's laws…	1 or 2**	
4. Genes are a set of instructions encoded in the DNA sequence…		
a. …the general pathway by which ribosomes synthesize proteins…	1	
b. …how to apply the genetic coding rules to predict the sequence…	1	
c. …mutations in the DNA sequence of a gene may or may not…	1	
d. …specialization of cells in multicellular organisms is usually…	1	
e. …proteins can differ from one another in the number and…	1	
5. Genetic composition of cells can be altered by incorporation…		
a. …the general structures and functions of DNA, RNA, and protein.	1 or 2**	
b. …how to apply base-pairing rules to explain precise copying of…	1 or 2**	
c. …genetic engineering is used to produce novel biomedical and…	1 or 2**	
Ecology	7	12%
6. Stability in an ecosystem is a balance between competing effects.		
a. …biodiversity is the sum total of different kinds of organisms…	1	
b. …how to analyze changes in an ecosystem resulting from…	1	
c. …fluctuations in population size in an ecosystem are…	1 or 2**	
d. …water, carbon, and nitrogen cycle between abiotic resources…	1 or 2**	
e. …a vital part of an ecosystem is the stability of its producers…	1	
f. …at each link in a food web some energy is stored in newly…	1	
Evolution	9	15%
7. The frequency of an allele in a gene pool of a population…		
a. …natural selection acts on the phenotype rather than the…	1	
b. …alleles that are lethal in a homozygous individual may be…	1	
c. …new mutations are constantly being generated in a gene pool.	1	
d. …variation within a species increases the likelihood that…	1	
8. Evolution is the result of genetic changes…	5	
a. …how natural selection determines the differential survival of…	1	
b. …a great diversity of species increases the chance that at least…	1	
c. …the effects of genetic drift on the diversity of organisms in a…	1	
d. …reproductive or geographic isolation affects speciation.	1	
e. … analyze fossil evidence with regard to biological diversity…	1	
Physiology	10	17%
9. As a result of the coordinated structures and functions of organ…		
a. …how the complementary activity of major body systems…	2/3***	
b. …how the nervous system mediates communication between…	1/3***	
c. …how feedback loops in the nervous and endocrine systems…	1	
d. …the functions of the nervous system and the role of neurons…	1	
e. …the roles of sensory neurons, interneurons, and motor…	1/3***	
10. Organisms have a variety of mechanisms to combat disease….		
a. …the role of the skin in providing nonspecific defenses…	1 or 2‡	
b. …the role of antibodies in the body's response to infection.	1	
c. …how vaccination protects an individual from infectious diseases.	1 or 2‡	
d. …there are important differences between bacteria and viruses…	1	
e. …why an individual with a compromised immune system…	1 or 2‡	
TOTAL	60	100%

* Standards are shaded according to CST Reporting Cluster (RC), where:
- RC1 is Investigation and Experimentation
- RC2 is Cell Biology
- RC3 is Genetics
- RC4 is Ecology and Evolution
- RC5 is Physiology

** Alternate years
*** Fractional values indicate rotated standards
‡ Every three years

NOTE: Non-assessed or embedded standards are omitted.

Assessment FOR Learning
LAUSD Periodic Assessments:

Provide formative, ongoing data which can be used to increase student achievement

PERIODIC ASSESSMENT #1

BIOLOGY CONTENT STANDARDS	# of Items
Cell Biology	13
1a…cells are enclosed within semipermeable membranes…	2
1b….enzymes are proteins that catalyze biochemical reactions…	2
1c…how prokaryotic cells, eukaryotic cells, and viruses differ…	2
1d…the central dogma of molecular biology…	2
1e…the role of the endoplasmic reticulum and Golgi apparatus…	1
1f…usable energy is captured from sunlight by chloroplasts…	2
1g…the role of the mitochondria…	1
1h… macromolecules in cells and organisms are synthesized…	1
Genetics	16
4a…the general pathway by which ribosomes synthesize…	2
4b…how to apply the genetic coding rules to predict the…	2
4c…mutations in the DNA sequence of a gene may or may not…	2
4d…specialization of cells in multicellular organisms is usually…	2
4e…proteins can differ from one another in the number and…	2
5a…the general structures and functions of DNA, RNA, and…	2
5b…how to apply base-pairing rules to explain precise copying…	2
5c…genetic engineering is used to produce novel biomedical…	2
Evolution	1
7c…new mutations are constantly being generated in a gene pool.	1
MULTIPLE CHOICE ITEMS	30
CONSTRUCTED RESPONSE ITEM	4 pts
4a…the general pathway by which ribosomes synthesize…	
1d…the central dogma of molecular biology…	
7c…new mutations are constantly being generated in a gene pool.	

PERIODIC ASSESSMENT #2

BIOLOGY CONTENT STANDARDS	# of Items
Cell Biology	3
1d…the central dogma of molecular biology…	2
1f…usable energy is captured from sunlight by chloroplasts…	1
Genetics	13
2a…meiosis is an early step in sexual reproduction…	2
2b…certain cells in a multicellular organism undergo meiosis.	1
2c…random chromosome segregation explains the probability…	2
2d…new combinations of alleles may be generated in a zygote…	2
2e…why approximately half of an individual's DNA sequence…	1
2f…the role of chromosomes in determining an individual's sex.	1
2g…how to predict possible combinations of alleles in a zygote…	1
3a…how to predict the probable outcome of phenotypes…	2
3b…the genetic basis for Mendel's laws…	1
Evolution	14
7a…natural selection acts on the phenotype rather than the…	1
7b…alleles that are lethal in a homozygous individual may be…	2
7c…mutations are constantly being generated in a gene pool.	2
7d…variation within a species increases the likelihood that…	2
8a…natural selection determines the differential survival of…	1
8b…diversity of species increases the chance that at least…	2
8c…the effects of genetic drift on the diversity of organisms in…	1
8d…reproductive or geographic isolation affects speciation.	1
8e… analyze fossil evidence with regard to biological diversity…	2
MULTIPLE CHOICE ITEMS	30
CONSTRUCTED RESPONSE ITEM	4 pts
8a…natural selection determines the differential survival of…	

Los Angeles Unified School District

Biology

Assessment OF Learning
California Standards Tests:

Provide summative, end-of-year or end-of-course results that document student achievement

BIOLOGY/LIFE SCIENCES CST BLUEPRINT*	# of Items	%
Cell Biology	9	15%
1. The fundamental life processes of plants and animals…		
a. …cells are enclosed within semipermeable membranes…	1	
b. …enzymes are proteins that catalyze biochemical reactions…	1 or 2**	
c. …how prokaryotic cells, eukaryotic cells, and viruses differ…	1 or 2**	
d. …the central dogma of molecular biology…	1	
e. …the role of the endoplasmic reticulum and Golgi apparatus…	1	
f. …usable energy is captured from sunlight by chloroplasts…	1	
g. …the role of the mitochondria…	1	
h. … macromolecules in cells and organisms are synthesized…	1	
Genetics	19	32%
2. Mutation and sexual reproduction lead to genetic variation…		
a. …meiosis is an early step in sexual reproduction…	1	
b. …only certain cells in a multicellular organism undergo meiosis.	1	
c. …random chromosome segregation explains the probability…	1	
d. …new combinations of alleles may be generated in a zygote…	1	
e. …why approximately half of an individual's DNA sequence…	1	
f. …the role of chromosomes in determining an individual's sex.	1	
g. …how to predict possible combinations of alleles in a zygote…	1	
3. A multicellular organism develops from a single zygote…		
a. …how to predict the probable outcome of phenotypes…	1 or 2**	
b. …the genetic basis for Mendel's laws…	1 or 2**	
4. Genes are a set of instructions encoded in the DNA sequence…		
a. …the general pathway by which ribosomes synthesize proteins…	1	
b. …how to apply the genetic coding rules to predict the sequence…	1	
c. …mutations in the DNA sequence of a gene may or may not…	1	
d. …specialization of cells in multicellular organisms is usually…	1	
e. …proteins can differ from one another in the number and…	1	
5. Genetic composition of cells can be altered by incorporation…		
a. …the general structures and functions of DNA, RNA, and protein.	1 or 2**	
b. …how to apply base-pairing rules to explain precise copying of…	1 or 2**	
c. …genetic engineering is used to produce novel biomedical and…	1 or 2**	
Ecology	7	12%
6. Stability in an ecosystem is a balance between competing effects.		
a. …biodiversity is the sum total of different kinds of organisms…	1	
b. …how to analyze changes in an ecosystem resulting from…	1	
c. …fluctuations in population size in an ecosystem are…	1 or 2**	
d. …water, carbon, and nitrogen cycle between abiotic resources…	1 or 2**	
e. …a vital part of an ecosystem is the stability of its producers…	1	
f. …at each link in a food web some energy is stored in newly…	1	
Evolution	9	15%
7. The frequency of an allele in a gene pool of a population…		
a. …natural selection acts on the phenotype rather than the…	1	
b. …alleles that are lethal in a homozygous individual may be…	1	
c. …new mutations are constantly being generated in a gene pool.	1	
d. …variation within a species increases the likelihood that…	1	
8. Evolution is the result of genetic changes…	5	
a. …how natural selection determines the differential survival of…	1	
b. …a great diversity of species increases the chance that at least…	1	
c. …the effects of genetic drift on the diversity of organisms in a…	1	
d. …reproductive or geographic isolation affects speciation.	1	
e. … analyze fossil evidence with regard to biological diversity…	1	
Physiology	10	17%
9. As a result of the coordinated structures and functions of organ…		
a. …how the complementary activity of major body systems…	2/3***	
b. …how the nervous system mediates communication between…	1/3***	
c. …how feedback loops in the nervous and endocrine systems…	1	
d. …the functions of the nervous system and the role of neurons…	1	
e. …the roles of sensory neurons, interneurons, and motor…	1/3***	
10. Organisms have a variety of mechanisms to combat disease….		
a. …the role of the skin in providing nonspecific defenses…	1 or 2‡	
b. …the role of antibodies in the body's response to infection.	1	
c. …how vaccination protects an individual from infectious diseases.	1 or 2‡	
d. …there are important differences between bacteria and viruses…	1	
e. …why an individual with a compromised immune system…	1 or 2‡	
TOTAL	60	100%

* Standards are shaded according to CST Reporting Cluster (RC), where:

- RC1 is Investigation and Experimentation
- RC2 is Cell Biology
- RC3 is Genetics
- RC4 is Ecology and Evolution
- RC5 is Physiology

** Alternate years
*** Fractional values indicate rotated standards
‡ Every three years

NOTE: Non-assessed or embedded standards are omitted.

Assessment FOR Learning
LAUSD Periodic Assessments:

Provide formative, ongoing data which can be used to increase student achievement

PERIODIC ASSESSMENT #3

BIOLOGY CONTENT STANDARDS	# of Items
Cell Biology	2
1a…cells are enclosed within semipermeable membranes…	1
1d…the central dogma of molecular biology…	1
Genetics	4
3b…the genetic basis for Mendel's laws…	1
4a…the general pathway by which ribosomes synthesize…	1
4c…mutations in the DNA sequence of a gene may or may not…	1
5a…the general structures and functions of DNA, RNA, and…	1
Ecology	12
6a…biodiversity is the sum total of different kinds of organisms…	2
6b…how to analyze changes in an ecosystem resulting from…	2
6c…fluctuations in population size in an ecosystem are…	3
6d…water, carbon, and nitrogen cycle between abiotic…	2
6e…a vital part of an ecosystem is the stability of its producers…	1
6f…at each link in a food web some energy is stored in newly…	2
Evolution	4
7a…natural selection acts on the phenotype rather than the…	1
7b…alleles that are lethal in a homozygous individual may be…	1
7c…new mutations are constantly being generated in a gene….	1
7d…variation within a species increases the likelihood that…	1
Physiology	18
9a…how the complementary activity of major body systems…	2
9b…how the nervous system mediates communication…	2
9c…how feedback loops in the nervous and endocrine…	3
9d…the functions of the nervous system and the role of…	2
10a…the role of the skin in providing nonspecific defenses…	2
10b…the role of antibodies in the body's response to infection.	2
10c…how vaccination protects an individual from infectious….	2
10d…there are important differences between bacteria and…	2
10e…why an individual with a compromised immune system…	1
TOTAL MULTIPLE CHOICE ITEMS	40
CONSTRUCTED RESPONSE ITEM	4 pts
6b…how to analyze changes in an ecosystem resulting from…	

Los Angeles Unified School District

Chemistry

Assessment OF Learning
California Standards Tests:

Provide summative, end-of-year or end-of-course results that document student achievement

CALIFORNIA CONTENT STANDARDS: CHEMISTRY*	# of Items	%
Atomic and Molecular Structure	6	10.0%
1. The periodic table displays the elements in increasing atomic number…		
a. …relate the position of an element in the periodic table to its atomic number and atomic mass.	1	
b. …use the periodic table to identify metals, semimetals, nonmetals…	1	
c. …use the periodic table to identify alkali metals, alkaline earth metals…	2	
d. …use the periodic table to determine the number of electrons available…	1	
e. …the nucleus of the atom is much smaller than the atom yet contains most of its mass.	1	
Chemical Bonds	7	11.7%
2. Biological, chemical, and physical properties of matter…		
a. …atoms combine to form molecules by sharing electrons to form…bonds	2	
b. …chemical bonds between atoms in molecules…	1	
c. …salt crystals are repeating patterns of positive and negative ions…	1	
d. …the atoms and molecules in liquids move in a random pattern…	1	
e. …how to draw Lewis dot structures.	2	
Conservation of Matter and Stoichiometry	10	16.7%
3. The conservation of atoms in chemical reactions…		
a. …how to describe chemical reactions by writing balanced equations.	2	
b. …the quantity *one mole* is set by defining one mole of carbon 12 atoms…	1	
c. …one mole equals 6.02 x 10^{23} particles (atoms or molecules).	1	
d. …how to determine the molar mass of a molecule from its chemical…	3	
e. …how to calculate the masses of reactants and products in a chemical…	3	
Gases and Their Properties	6	10.0%
4. The kinetic molecular theory describes the motion of atoms and…		
a. …the random motion of molecules and their collisions with a surface…	1	
b. …the random motion of molecules explains the diffusion of gases.	1	
c. …how to apply the gas laws to relations between the pressure…	2	
d. …the values and meanings of standard temperature and pressure (STP).	1	
e. …how to convert between the Celsius and Kelvin temperature scales.	1/2***	
f. …there is no temperature lower than 0 Kelvin.	1/2***	
Acids and Bases	5	8.3%
5. Acids, bases, and salts are three classes of compounds that form ions…		
a. …the observable properties of acids, bases, and salt solutions.	2	
b. …acids are hydrogen-ion-donating and bases are hydrogen-ion…	1	
c. …strong acids and bases fully dissociate and weak acids and bases…	1	
d. …how to use the pH scale to characterize acid and base solutions.	1	
Solutions	3	5.0%
6. Solutions are homogenous mixtures of two or more substances.		
a. …the definitions of *solute* and *solvent*.	1	
b. …how to describe the dissolving process at the molecular level…	1	
c. …temperature, pressure, and surface area affect the dissolving process.	1/2***	
d. …how to calculate the concentration of a solute…	1/2***	
Chemical Thermodynamics	5	8.3%
7. Energy is exchanged or transformed in all chemical reactions and…		
a. …how to describe temperature and heat flow in terms of the motion of…	1	
b. …chemical processes can either release or absorb thermal energy.	1	
c. …energy is released when a material condenses or freezes and is…	1	
d. …how to solve problems involving heat flow and temperature changes…	2	
Reaction Rates	4	6.7%
8. Chemical reaction rates depend on factors that influence the frequency…		
a. …the rate of reaction is the decrease in concentration of reactants or…	1	
b. …how reaction rates depend on such factors as concentration…	1 or 2**	
c. …the role a catalyst plays in increasing the reaction rate.	1 or 2**	
Chemical Equilibrium	4	6.7%
9. Chemical equilibrium is a dynamic process at the molecular level.		
a. …how to use LeChatelier's principle to predict the effect of changes…	3	
b. …equilibrium is established when forward and reverse reaction rates…	1	
Organic Chemistry and Biochemistry	2	3.3%
10. The bonding characteristics of carbon allow the formation of many…		
a. …large molecules (polymers), such as proteins, nucleic acids, and starch, are formed…	1	
b. …the bonding characteristics of carbon that result in the formation of a large variety of…	1/2***	
c. …amino acids are the building blocks of proteins.	1/2***	
Nuclear Processes	2	3.3%
11. Nuclear processes are those in which an atomic nucleus changes…		
a. …protons and neutrons in the nucleus are held together by nuclear forces…	2/5***	
b. …the energy release per gram of material is much larger in nuclear fusion or fission…	2/5***	
c. …some naturally occurring isotopes of elements are radioactive, as are isotopes…	2/5***	
d. …the three most common forms of radioactive decay…and how the nucleus changes…	2/5***	
e. …alpha, beta, and gamma radiation produce different amounts and kinds of damage…	2/5***	
TOTAL	60	100%

* Standards are shaded according to CST Reporting Cluster (RC), where:
- RC1 is Investigation and Experimentation
- RC2 is Atomic and Molecular Structure
- RC3 is Chemical Bonds, Biochemistry
- RC4 is Kinetics, Thermodynamics
- RC5 is Chemical Reactions
- RC6 is Conservation of Matter and Stoichiometry

** Alternate years
*** Fractional values indicate rotated years

NOTE: Non-assessed or embedded standards are omitted.

Assessment FOR Learning
LAUSD Periodic Assessments:

Provide formative, ongoing data which can be used to increase student achievement

PERIODIC ASSESSMENT #1

CHEMISTRY CONTENT STANDARDS	# of Items
Atomic and Molecular Structure	14
1a…relate the position of an element in the periodic table to its atomic…	2
1b…use the periodic table to identify metals, semimetals, nonmetals…	2
1c…use the periodic table to identify alkali metals, alkaline earth metals…	3
1d…use the periodic table to determine the number of electrons…	2
1e…the nucleus of the atom is much smaller than the atom yet contains…	2
1g…relate the position of an element in the periodic table to its quantum…	1
1h…the experimental basis for Thomson's discovery of the electron…	1
1i…the experimental basis for the development of the quantum theory…	1
Chemical Bonds	12
2a…atoms combine to form molecules by sharing electrons to form…bonds	2
2b…chemical bonds between atoms in molecules…	2
2c…salt crystals are repeating patterns of positive and negative ions…	2
2d…the atoms and molecules in liquids move in a random pattern…	2
2e…how to draw Lewis dot structures.	2
2f…predict the shape of simple molecules and their polarity from Lewis…	1
2h…identify solids and liquids held together by Van der Waals forces or…	1
Conservation of Matter and Stoichiometry	4
3a…how to describe chemical reactions by writing balanced equations.	2
3b…the quantity *one mole* is set by defining one mole of carbon 12…	1
3c…one mole equals 6.02 x 10^{23} particles (atoms or molecules).	1
MULTIPLE CHOICE ITEMS	30
CONSTRUCTED RESPONSE ITEM	4 pts
3a…how to describe chemical reactions by writing balanced equations.	

PERIODIC ASSESSMENT #2

CHEMISTRY CONTENT STANDARDS	# of Items
Atomic and Molecular Structure	3
1a…relate the position of an element in the periodic table to its atomic…	1
1c…use the periodic table to identify alkali metals, alkaline earth metals…	1
1g…relate the position of an element in the periodic table to its quantum…	1
Conservation of Matter and Stoichiometry	6
3c…one mole equals 6.02 x 10^{23} particles (atoms or molecules).	1
3d…how to determine the molar mass of a molecule from its chemical…	2
3e…how to calculate the masses of reactants and products in a chemical…	2
3g…identify reactions that involve oxidation and reduction and how to…	1
Gasses and Their Properties	7
4a…the random motion of molecules and their collisions with a surface…	1
4b…the random motion of molecules explains the diffusion of gases.	1
4c…how to apply the gas laws to relations between the pressure…	1
4d…the values and meanings of standard temperature and pressure (STP).	1
4e…how to convert between the Celsius and Kelvin temperature scales.	1
4g…solve problems by using the ideal gas law in the form *PV = nRT*.	1
Acids and Bases	4
5a…the observable properties of acids, bases, and salt solutions.	2
5b…acids are hydrogen-ion-donating and bases are hydrogen-ion…	1
5d…how to calculate the concentration of a solute…	1
5g…buffers stabilize pH in acid-base reactions.	1
Solutions	6
6a…the definitions of *solute* and *solvent*.	1
6b…how to describe the dissolving process at the molecular level…	1
6c…temperature, pressure, and surface area affect the dissolving process.	2
6d…how to calculate the concentration of a solute…	1
6e…the relationship between the molality of a solute in a solution and the…	1
Chemical Equilibrium	4
9a…how to use LeChatelier's principle to predict the effect of changes…	2
9b…equilibrium is established when forward and reverse reaction rates…	2
MULTIPLE CHOICE ITEMS	30
CONSTRUCTED RESPONSE ITEM	4 pts
6c…temperature, pressure, and surface area affect the dissolving process.	

Los Angeles Unified School District

Chemistry

Assessment OF Learning
California Standards Tests:

Provide summative, end-of-year or end-of-course results that document student achievement

CALIFORNIA CONTENT STANDARDS: CHEMISTRY*	# of Items	%
Atomic and Molecular Structure	6	10.0%
1. The periodic table displays the elements in increasing atomic number…		
a. …relate the position of an element in the periodic table to its atomic number and atomic mass.	1	
b. …use the periodic table to identify metals, semimetals, nonmetals…	1	
c. …use the periodic table to identify alkali metals, alkaline earth metals…	2	
d. …use the periodic table to determine the number of electrons available…	1	
e. …the nucleus of the atom is much smaller than the atom yet contains most of its mass.	1	
Chemical Bonds	7	11.7%
2. Biological, chemical, and physical properties of matter…		
a. …atoms combine to form molecules by sharing electrons to form…bonds	2	
b. …chemical bonds between atoms in molecules…	1	
c. …salt crystals are repeating patterns of positive and negative ions…	1	
d. …the atoms and molecules in liquids move in a random pattern…	1	
e. …how to draw Lewis dot structures.	2	
Conservation of Matter and Stoichiometry	10	16.7%
3. The conservation of atoms in chemical reactions…		
a. …how to describe chemical reactions by writing balanced equations.	2	
b. …the quantity *one mole* is set by defining one mole of carbon 12 atoms…	1	
c. …one mole equals 6.02 x 10^{23} particles (atoms or molecules).	1	
d. …how to determine the molar mass of a molecule from its chemical…	3	
e. …how to calculate the masses of reactants and products in a chemical…	3	
Gases and Their Properties	6	10.0%
4. The kinetic molecular theory describes the motion of atoms and…		
a. …the random motion of molecules and their collisions with a surface…	1	
b. …the random motion of molecules explains the diffusion of gases.	1	
c. …how to apply the gas laws to relations between the pressure…	2	
d. …the values and meanings of standard temperature and pressure (STP).	1	
e. …how to convert between the Celsius and Kelvin temperature scales.	1/2***	
f. …there is no temperature lower than 0 Kelvin.	1/2***	
Acids and Bases	5	8.3%
5. Acids, bases, and salts are three classes of compounds that form ions…		
a. …the observable properties of acids, bases, and salt solutions.	2	
b. …acids are hydrogen-ion-donating and bases are hydrogen-ion…	1	
c. …strong acids and bases fully dissociate and weak acids and bases…	1	
d. …how to use the pH scale to characterize acid and base solutions.	1	
Solutions	3	5.0%
6. Solutions are homogenous mixtures of two or more substances.		
a. …the definitions of *solute* and *solvent*.	1	
b. …how to describe the dissolving process at the molecular level…	1	
c. …temperature, pressure, and surface area affect the dissolving process.	1/2***	
d. …how to calculate the concentration of a solute…	1/2***	
Chemical Thermodynamics	5	8.3%
7. Energy is exchanged or transformed in all chemical reactions and…		
a. …how to describe temperature and heat flow in terms of the motion of…	1	
b. …chemical processes can either release or absorb thermal energy.	1	
c. …energy is released when a material condenses or freezes and is…	1	
d. …how to solve problems involving heat flow and temperature changes…	2	
Reaction Rates	4	6.7%
8. Chemical reaction rates depend on factors that influence the frequency…		
a. …the rate of reaction is the decrease in concentration of reactants or…	1	
b. …how reaction rates depend on such factors as concentration…	1 or 2**	
c. …the role a catalyst plays in increasing the reaction rate.	1 or 2**	
Chemical Equilibrium	4	6.7%
9. Chemical equilibrium is a dynamic process at the molecular level.		
a. …how to use LeChatelier's principle to predict the effect of changes…	3	
b. …equilibrium is established when forward and reverse reaction rates…	1	
Organic Chemistry and Biochemistry	2	3.3%
10. The bonding characteristics of carbon allow the formation of many…		
a. …large molecules (polymers), such as proteins, nucleic acids, and starch, are formed…	1	
b. …the bonding characteristics of carbon that result in the formation of a large variety of…	1/2***	
c. …amino acids are the building blocks of proteins.	1/2***	
Nuclear Processes	2	3.3%
11. Nuclear processes are those in which an atomic nucleus changes…		
a. …protons and neutrons in the nucleus are held together by nuclear forces…	2/5***	
b. …the energy release per gram of material is much larger in nuclear fusion or fission…	2/5***	
c. …some naturally occurring isotopes of elements are radioactive, as are isotopes…	2/5***	
d. …the three most common forms of radioactive decay…and how the nucleus changes…	2/5***	
e. …alpha, beta, and gamma radiation produce different amounts and kinds of damage…	2/5***	
TOTAL	60	100%

* Standards are shaded according to CST Reporting Cluster (RC), where:
- RC1 is Investigation and Experimentation
- RC2 is Atomic and Molecular Structure
- RC3 is Chemical Bonds, Biochemistry
- RC4 is Kinetics, Thermodynamics
- RC5 is Chemical Reactions
- RC6 is Conservation of Matter and Stoichiometry

** Alternate years
*** Fractional values indicate rotated years

NOTE: Non-assessed or embedded standards are omitted.

Assessment FOR Learning
LAUSD Periodic Assessments:

Provide formative, ongoing data which can be used to increase student achievement

PERIODIC ASSESSMENT #3

CHEMISTRY CONTENT STANDARDS	# of Items
Atomic and Molecular Structure	2
1c…use the periodic table to identify alkali metals, alkaline earth metals…	1
1d…use the periodic table to determine the number of electrons…	1
Chemical Bonds	2
2a…atoms combine to form molecules by sharing electrons to form…bonds	1
2b…chemical bonds between atoms in molecules…	1
Conservation of Matter and Stoichiometry	1
3a…how to describe chemical reactions by writing balanced equations.	1
Gasses and Their Properties	1
4h…solve problems by using the ideal gas law	1
Acids and Bses	2
5b…acids are hydrogen-ion-donating and bases are hydrogen-ion…	1
5d…how to calculate the concentration of a solute…	1
Solutions	2
6d…how to calculate the concentration of a solute…	1
6e…the relationship between the molality of a solute in a solution and the…	1
Chemical Thermodynamics	8
7a…how to describe temperature and heat flow in terms of the motion of…	2
7b…chemical processes can either release or absorb thermal energy.	2
7c…energy is released when a material condenses or freezes and is…	2
7d…how to solve problems involving heat flow and temperature changes…	2
Reaction Rates	7
8a…the rate of reaction is the decrease in concentration of reactants or…	2
8b…how reaction rates depend on such factors as concentration…	2
8c…the role a catalyst plays in increasing the reaction rate.	2
8d…definition and role of activation energy in a chemical reaction	1
Organic Chemistry and Biochemistry	7
10a…large molecules (polymers), such as proteins, nucleic acids, and…	2
10b…the bonding characteristics of carbon that result in the formation of…	2
10c…amino acids are the building blocks of proteins.	1
10d…system for naming the ten simplest linear hydrocarbons and…	1
10f…the R-group structure of amino acids and know how they combine…	1
Nuclear Processes	8
11a…protons and neutrons in the nucleus are held together by nuclear…	1
11b…the energy release per gram of material is much larger in nuclear…	1
11c…some naturally occurring isotopes of elements are radioactive, as…	2
11d…the three most common forms of radioactive decay…and how the…	2
11e…alpha, beta, and gamma radiation produce different amounts and…	1
11f…calculate the amount of a radioactive substance remaining after an…	1
TOTAL MULTIPLE CHOICE ITEMS	40
CONSTRUCTED RESPONSE ITEM	4 pts
7b…chemical processes can either release or absorb thermal energy.	

NOTE: Unshaded standards are not separately assessed on the CST.