Science Grade 4

Assessment OF Learning, California Standards Tests:

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

of GRADE 5 CST SCIENCE BLUEPRINT % Physical Science 30% 18 Physical Sciences – Grade 5 1. Elements and their combinations account for all the varied 11 types of matter in the world. a. ...during chemical reactions the atoms rearrange b. ...all matter is made of atoms 1 ...metals have properties in common 1 or 2* each element is made of one kind of atom instruments can create images of atoms and molecules. ...differences in properties are used to identify compounds ... properties of solid, liquid, and gaseous substances 2 h. ...organisms and materials are composed of a few elements i. ...the common properties of salts, such as sodium chloride Physical Sciences – Grade 4 0 or 1* Electricity and magnetism are related effects ...how to design and build simple series and parallel circuits 1 ...how to build a simple compass and use it ...electric currents produce magnetic fields b. C. ...the role of electromagnets in motors and generators ...electrically charged objects attract or repel each other d. .magnets have two poles ...electrical energy can be converted to heat, light, and motion g. 30% Life Science 18 Life Sciences - Grade 5 9 2. Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials. ...many multicellular organisms have specialized structures ...blood circulates through the heart, lungs, and body ...sequential steps of digestion and system structures b. .the role of the kidney in removing cellular waste from blood .how sugar, water, and minerals are transported d. f ...plants use carbon dioxide (CO2) and energy from sunlight plant and animal cells break down sugar to obtain energy g. Life Sciences - Grade 4 All organisms need energy and matter to live and grow. ...plants as the primary source of matter, energy in food chains a ... producers and consumers are related in food chains h ... decomposers recycle matter from dead plants and animals C. Living organisms depend on one another and on their environment for survival. 3 ecosystems can be characterized by their components ...some kinds of plants and animals survive well, others don' .many plants depend on animals for pollination ..most microorganisms do not cause disease 30% Earth Science 18 Earth Science - Grade 5 11 Water on Earth moves between the oceans and land through 3 the processes of evaporation and condensation. ...most of Earth's water is present as salt water in the oceans 0 or 1* ...when liquid water evaporates, it turns into water vapor ...water vapor in the air moves and forms clouds, rain, snow b. ...the amount of fresh water is limited Energy from the Sun heats Earth unevenly, causing air movements that result in changing weather patterns. 4 a. ...uneven heating of Earth causes air movements b. ...the influence that the ocean has on the weather ...the causes and effects of different types of severe weather ...how to use weather maps and data to predict local weather d. ...the Earth's atmosphere exerts a pressure The solar system consists of planets and other bodies that orbit the Sun in predictable paths. ... the Sun is the central body in the solar system 0 or 1* ... the components of the solar system b. how the path of a planet around the Sun is determined Earth Science - Grade 4 The properties of rocks and minerals reflect the processes that 4 formed them. .differentiate among rocks by referring to their properties .identify common minerals by using a table of properties Waves, wind, water, and ice shape and reshape Earth's land surface ...changes in the earth are due to slow and rapid processes a. ...natural processes cause rocks to break down ...moving water erodes landforms, reshaping the land Investigation and Experimentation Investigation and Experimentation – Grade 5 Investigation and Experimentation – Grade 4 6 10% Investigation and Experimentation – Grade 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 1.g	how to design and build simple series and parallel circi electrical energy can be converted to heat, light, and m	uits notion

LIFE SCIENCE ASSESSMENT

	GRADE 4 CONTENT STANDARDS	# of Items
2.	All organisms need energy and matter to live and grow.	9
а.	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
а.	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	aplants as the primary source of matter, energy in food bproducers and consumers are related in food chains	chains

EARTH SCIENCE ASSESSMENT

	GRADE 4 CONTENT STANDARDS	# of Items
4.	The properties of rocks and minerals reflect the processes that formed them.	9
а.	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
а.	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 5.b	differentiate among rocks by referring to their propertie natural processes cause rocks to break down	S

Science Grade 5

of

Items

18

11

1

1 or 2*

0 or 1*

18

9

1

18

0 or 1*

60

30%

10%

100%

%

30%

30%

Assessment OF Learning, **California Standards Tests:**

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

GRADE 5 CST BLUEPRINT

instruments can create images of atoms and molecules. ...differences in properties are used to identify compounds ... properties of solid, liquid, and gaseous substances

.. organisms and materials are composed of a few elements i. ...the common properties of salts, such as sodium chloride Physical Sciences – Grade 4

Electricity and magnetism are related effects ...how to design and build simple series and parallel circuits

...the role of electromagnets in motors and generators ...electrically charged objects attract or repel each other

...electrical energy can be converted to heat, light, and motion

Life Science

Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials. ...many multicellular organisms have specialized structures .blood circulates through the heart, lungs, and body .sequential steps of digestion and system structures the role of the kidney in removing cellular waste from blood how sugar, water, and minerals are transported

.plants use carbon dioxide (CO2) and energy from sunlight plant and animal cells break down sugar to obtain energy

All organisms need energy and matter to live and grow. ...plants as the primary source of matter, energy in food

... producers and consumers are related in food chains ...decomposers recycle matter from dead plants and animals Living organisms depend on one another and on their

.. ecosystems can be characterized by their components ...some kinds of plants and animals survive well, others don't

Earth Science

Water on Earth moves between the oceans and land through the processes of evaporation and condensation. ...most of Earth's water is present as salt water in the oceans

when liquid water evaporates, it turns into water vapor water vapor in the air moves and forms clouds, rain, snow the amount of fresh water is limited nergy from the Sun heats Earth unevenly, causing air movements that result in changing weather patterns. ...uneven heating of Earth causes air movements the influence that the ocean has on the weather the causes and effects of different types of severe weather how to use weather maps and data to predict local weather

...the Earth's atmosphere exerts a pressure The solar system consists of planets and other bodies that orbit the Sun in predictable paths. ...the Sun is the central body in the solar system

The properties of rocks and minerals reflect the processes that

...differentiate among rocks by referring to their properties identify common minerals by using a table of properties Waves, wind, water, and ice shape and reshape Earth's land

... changes in the earth are due to slow and rapid processes ...natural processes cause rocks to break down

b. ...the components of the solar system
 c. ...how the path of a planet around the Sun is deter
 Earth Science – Grade 4

...many plants depend on animals for pollination ...most microorganisms do not cause disease

Physical Sciences – Grade 5 1. Elements and their combinations account for all the varied

...during chemical reactions the atoms rearrange

...metals have properties in common ...each element is made of one kind of atom

...how to build a simple compass and use it ...electric currents produce magnetic fields

Physical Sciences

b.

d.

h.

1 a

b. C.

d

g.

d

g.

a.

b.

d.

types of matter in the world.

.all matter is made of atoms

.magnets have two poles

Life Sciences - Grade 5

Life Sciences – Grade 4

Earth Science - Grade 5

environment for survival.

chains b.

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 1.b 1.f.	during chemical reactions the atoms rearrange all matter is made of atoms 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 (CO2) 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. 2.c.	many multicellular organisms have specialized structures 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
а.	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
е.	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
а.	the Sun is the central body in the solar system	1
b.	the components of the solar system	1
С.	how the path of a planet around the Sun is determined	1
	MULTIPLE CHOICE ITEMS	20
	CONSTRUCTED RESPONSE ITEM	4 pts
4.a 4.b 4.d	 uneven heating of Earth causes air movements the influence that the ocean has on the weather how to use weather maps and data to predict local weather 	

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

formed them.

surface.

* Alternate vears

b.

NOTE: Non-assessed or embedded standards are omitted

c. ...moving water erodes landforms, reshaping the land Investigation and Experimentation Investigation and Experimentation – Grade 5

Investigation and Experimentation – Grade 4 TOTALGRADE 5

Assessment OF Learning, California Standards Tests:

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

	# of	0/
	Items	70
1. The velocity of an object is the rate of change of its position	8	13%
aposition is defined in relation to some choice of a standard	1	
b average speed is the total distance traveled divided by the total	1	
time elapsed and that the speed of an object along the path		
csolve problems involving distance, time, and average speed.	2	
direction and the speed of the object.	1	
echanges in velocity may be due to changes in speed, direction,	1	
or both. f interpret graphs of position versus time and graphs of speed	2	
Forces	8	13%
Unbalanced forces cause changes in velocity.		
aa force has both direction and magnitude.	1	
result is the cumulative effect of all the forces.	1	
cwhen the forces on an object are balanced, the motion of the	1	
object does not change.		
0identity separately the two or more forces that are acting on a single static object, including gravity, elastic forces due to	2	
ewhen the forces on an object are unbalanced, the object will	1	
fthe greater the mass of an object, the more force is needed to	1	
gthe role of gravity in forming and maintaining the shapes of	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	2	
athe structure of the atom and know it is composed of protons bcompounds are formed by combining two or more different	2	
catoms and molecules form solids by building up repeating	-	
patterns, such as the crystal structure of NaCl or long-chain	1	
dthe states of matter depend on molecular motion.	1	
eIn solids the atoms are closely locked in position and can only	2	
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		
shapes.	1	
bthe Sun is one of many stars in the Milky Way galaxy and that	2	
stars may differ in size, temperature, and color.	-	
cuse astronomical units and light years as measures of distances between the Sun, stars, and Earth	1	
dstars are the source of light for all bright objects in outer space	1	
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.	1	
bthe idea of atoms explains the conservation of matter: In	-	
chemical reactions the number of atoms stays the same no	2	
cchemical reactions usually liberate heat or absorb heat.	1	
dphysical processes include freezing and boiling, in which a material changes form with no chemical reaction	2	
edetermine whether a solution is acidic, basic, or neutral.	1	
Chemistry of Living Systems (Life Science)	3	5%
 b. Principles of chemistry underlie the functioning of biological systems 		
acarbon, because of its ability to combine in many ways with itself	4	
and other elements, has a central role in the chemistry	1	
bthat living organisms are made of molecules consisting largely of	1	
cthat 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.		
gases.	2	
beach element has a specific number of protons in the nucleus	2	
csubstances can be classified by their properties, including their	3	
Density and Buoyancy	5	8%
8. All objects experience a buoyant force when immersed in a fluid.	0	070
adensity is mass per unit volume.	1	
 bcalculate the density of substances (regular and irregular solids and liquids) from measurements of mass and volume. 	2	
c, the buovant force on an object in a fluid is an upward force equal		
to the weight of the fluid the object has displaced.	1	
dpredict whether an object will float or sink.	1	4001
Investigation and Experimentation	6	10%
I otal Grade 8	60	100%

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
1aposition is defined in relation to some choice of a standard	1
1baverage speed is the total distance traveled divided by the total time elapsed and that the speed of an object along the path	2
1csolve problems involving distance, time, and average speed.	2
1dthe velocity of an object must be described by specifying both the direction and the speed of the object.	2
1echanges in velocity may be due to changes in speed, direction	2
1finterpret graphs of position versus time and graphs of speed	2
Forces	11
2aa force has both direction and magnitude.	2
2bwhen an object is subject to two or more forces at once, the result is the cumulative effect of all the forces.	2
2cwhen the forces on an object are balanced, the motion of the object does not change.	2
2didentify separately the two or more forces that are acting on a single static object, including gravity, elastic forces due to	2
2ewhen the forces on an object are unbalanced, the object will	2
2fthe greater the mass of an object, the more force is needed to	1
Density and Buoyancy	8
8adensity is mass per unit volume.	2
8bcalculate the density of substances from measurements	2
8cthe buoyant force on an object in a fluid is an upward force equal to the weight of the fluid the object has displaced.	2
8dpredict whether an object will float or sink.	2
MULTIPLE CHOICE ITEMS	30
CONSTRUCTED RESPONSE ITEM	4 pts
1csolve problems involving distance, time, and average speed.	

PERIODIC ASSESSMENT #2

CONTENT OF A CONTENT OF AND ADDO	# of
SCIENCE & CONTENT STANDARDS	Items
Structure of Matter	12
3athe structure of the atom and know it is composed of protons	1
3bcompounds are formed by combining two or more different	2
3catoms and molecules form solids by building up repeating	2
patterns, such as the crystal structure of NaCl or long-chain	2
3dthe states of matter depend on molecular motion.	2
3ein solids the atoms are closely locked in position and can only	3
3fuse the periodic table to identify elements in simple compounds.	2
Reactions	11
5areactant atoms and molecules interact to form products with	2
5bthe idea of atoms explains the conservation of matter: In	3
5cchemical reactions usually liberate heat or absorb heat.	2
5dphysical processes include freezing and boiling, in which a	2
material changes form with no chemical reaction.	2
5edetermine whether a solution is acidic, basic, or neutral.	2
Periodic Table	7
7aidentify regions corresponding to metals, nonmetals, and inert	2
7beach element has a specific number of protons in the nucleus	2
7csubstances can be classified by their properties, including their	2
melting temperature, density, hardness, and thermal and	3
MULTIPLE CHOICE ITEMS	30
CONSTRUCTED RESPONSE ITEM	4 pts
5bthe idea of atoms explains the conservation of matter: In chemical	i

Assessment OF Learning, California Standards Tests:

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

	# of	0/
GRADE & SUENCE BLUEPRINT	Items	70
1. The velocity of an object is the rate of change of its position	8	13%
aposition is defined in relation to some choice of a standard	1	
baverage speed is the total distance traveled divided by the total	1	
unre elapsed and that the speed of an object along the path	2	
dthe velocity of an object must be described by specifying both the	2	
direction and the speed of the object.	1	
 echanges in velocity may be due to changes in speed, direction, or both 	1	
finterpret graphs of position versus time and graphs of speed	2	
Forces	8	13%
2. Unbalanced forces cause changes in velocity.		
bwhen an object is subject to two or more forces at once, the		
result is the cumulative effect of all the forces.	1	
cwhen the forces on an object are balanced, the motion of the	1	
d,identify separately the two or more forces that are acting on a		
single static object, including gravity, elastic forces due to	2	
ewhen the forces on an object are unbalanced, the object will	1	
tthe greater the mass of an object, the more force is needed to a the role of gravity in forming and maintaining the shapes of	1	
planets, stars, and the solar system.	1	
Structure of Matter	9	15%
 Each of the more than 100 elements of matter has distinct properties and a distinct atomic structure. All forms of matter 		
athe structure of the atom and know it is composed of protons	2	
bcompounds are formed by combining two or more different	2	
catoms and molecules form solids by building up repeating	1	
d, the states of matter depend on molecular motion.	1	
ein solids the atoms are closely locked in position and can only	2	
fuse the periodic table to identify elements in simple compounds.	1	1001
Earth in the Solar System (Earth Science) The structure and composition of the universe can be learned from	1	12%
studying stars and galaxies and their evolution		
agalaxies are clusters of billions of stars and may have different	1	
shapes.		
stars may differ in size, temperature, and color.	2	
cuse astronomical units and light years as measures of distances	1	
between the Sun, stars, and Earth.		
and the Moon and planets shine by reflected sunlight, not by	1	
ethe appearance, general composition, relative position and size,	2	
and motion of objects in the solar system, including planets	- 7	120/
5. Chemical reactions are processes in which atoms are rearranged	'	12 70
into different combinations of molecules.		
areactant atoms and molecules interact to form products with	1	
bthe idea of atoms explains the conservation of matter: in chemical reactions the number of atoms stavs the same no	2	
cchemical reactions usually liberate heat or absorb heat.	1	
dphysical processes include freezing and boiling, in which a	2	
edetermine 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. acarbon, because of its ability to combine in many ways with itself		
and other elements, has a central role in the chemistry	1	
bthat living organisms are made of molecules consisting largely of	1	
carbon, nydrogen, nitrogen, oxygen, phosphorus, and sulfur.	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.		
gases.	2	
beach element has a specific number of protons in the nucleus	2	
csubstances 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.		
adensity is mass per unit volume.	1	
and liquids) from measurements of mass and volume.	2	
cthe buoyant force on an object in a fluid is an upward force equal	1	
to the weight of the fluid the object has displaced.	4	
Investigation and Experimentation	6	10%
Total Grade 8	60	100%

Assessment FOR Learning, LAUSD Periodic Assessments:

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PERIODIC ASSESSMENT #3

SCIENCE 8 CONTENT STANDARDS	# of
	Items
Motion	2
1baverage 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
2ewhen the forces on an object are unbalanced, the object will	1
2gthe role of gravity in forming and maintaining the shapes of	4
planets, stars, and the solar system	4
Structure of Matter	2
3dthe states of matter depend on molecular motion	1
3ein solids the atoms are closely locked in position and can only	1
Earth in the Solar System (Earth Science)	17
4agalaxies are clusters of billions of stars and may have different shapes.	3
4bthe Sun is one of many stars in the Milky Way galaxy and	4
4cuse astronomical units and light years as measures of distances between the Sun, stars, and Earth.	3
4dstars are the source of light for all bright objects in outer space and the Moon and planets shine by reflected sunlight, not by	3
4ethe appearance, general composition, relative position and size, and motion of objects in the solar system, including planets	4
Reactions	2
5cchemical reactions usually liberate heat or absorb heat.	1
5dphysical processes include freezing and boiling, in which a	1
Chemistry of Living Systems (Life Science)	9
6acarbon, because of its ability to combine in many ways with itself and other elements, has a central role in the chemistry	3
6bthat living organisms are made of molecules consisting largely of carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulfur.	3
6cthat living organisms have many different kinds of molecules	3
Periodic Table	1
7beach element has a specific number of protons in the nucleus	1
Density and Buoyancy	2
8bcalculate the density of substances from measurements of	1
8cthe buoyant force on an object in a fluid is an upward force	1
TOTAL MULTIPLE CHOICE ITEMS	40
CONSTRUCTED RESPONSE ITEM	4 pts
4ethe appearance, general composition, relative position and size, a motion of objects in the solar system, including planets	ind

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	%
Cell Biology	9	15%
1. The fundamental life processes of plants and animals		
acells are enclosed within semipermeable membranes	1	
benzymes are proteins that catalyze biochemical reactions	1 or 2**	
chow prokaryotic cells, eukaryotic cells, and viruses differ	1 or 2**	
dthe central dogma of molecular biology	1	
f usable energy is captured from sunlight by chloroplasts	1	
gthe role of the mitochondria	1	
h macromolecules in cells and organisms are synthesized	1	1
Genetics	19	32%
Mutation and sexual reproduction lead to genetic variation		
ameiosis is an early step in sexual reproduction	1	
bonly certain cells in a multicellular organism undergo meiosis.	1	
crandom chromosome segregation explains the probability	1	
uinew combinations of alleles may be generated in a zygote	1	
f the role of chromosomes in determining an individual's sex	1	
ghow to predict possible combinations of alleles in a zygote	1	
3. A multicellular organism develops from a single zvgote		
ahow to predict the probable outcome of phenotypes	1 or 2**	
bthe genetic basis for Mendel's laws	1 or 2**	
4. Genes are a set of instructions encoded in the DNA sequence		
athe general pathway by which ribosomes synthesize proteins	1	
bhow to apply the genetic coding rules to predict the sequence	1	
cmutations in the DNA sequence of a gene may or may not	1	
dspecialization of cells in multicellular organisms is usually	1	
eproteins can differ from one another in the number and	1	
5. Genetic composition of cells can be altered by incorporation	1 or 0**	
athe general structures and functions of DNA, RNA, and protein.	1 01 Z	
b now to apply base-paining rules to explain precise copying of	1 OF 2**	i i
Ecology	7	12%
Ecology 6. Stability in an ecosystem is a balance between competing effects.	7	12%
Ecology 6. Stability in an ecosystem is a balance between competing effects. abiodiversity is the sum total of different kinds of organisms	7	12%
Ecology E	7 1 1	12%
Consigned and a set of produce nover borneducar and Ecology Stability in an ecosystem is a balance between competing effects. Libidiversity is the sum total of different kinds of organisms bhow to analyze changes in an ecosystem resulting from Cfluctuations in population size in an ecosystem are	1 or 2**	12%
Consigned engineering is used to produce nover bornedical and Ecology Stability in an ecosystem is a balance between competing effects. Libidiversity is the sum total of different kinds of organisms Lhow to analyze changes in an ecosystem resulting from Cfluctuations in population size in an ecosystem are Lwater, carbon, and nitrogen cycle between abiotic resources	7 7 1 1 or 2** 1 or 2**	12%
Ecology E	1 7 1 1 or 2** 1 or 2**	12%
Conception of the second produce inversion bonnetical and the second produce inversion bonnetical and the second sec	1 7 1 1 or 2** 1 or 2** 1 1	12%
Consigned and the set of produce nover borneducar and Ecology Stability in an ecosystem is a balance between competing effects. biodiversity is the sum total of different kinds of organisms bhow to analyze changes in an ecosystem resulting from cfluctuations in population size in an ecosystem are dwater, carbon, and nitrogen cycle between abiotic resources ea vital part of an ecosystem is the stability of its producers fat each link in a food web some energy is stored in newly Evolution	1 or 2** 1 or 2** 1 or 2** 1 or 2** 9	12%
Exclogy Ecology E	1 1 1 or 2** 1 or 2** 1 9	12% 15%
Consequence engineering is used to produce nover borneducar and Ecology Ecology Stability in an ecosystem is a balance between competing effects. abiodiversity is the sum total of different kinds of organisms cfluctuations in population size in an ecosystem resulting from cfluctuations in population size in an ecosystem are dwater, carbon, and nitrogen cycle between abioitc resources ea vital part of an ecosystem is the stability of its producers Fat each link in a food web some energy is stored in newly Evolution The frequency of an allele in a gene pool of a population anatural selection acts on the phenotype rather than the Bullets that are left in a bornerource individual may be	1 1 1 or 2** 1 or 2** 1 1 9 1 1	12% 15%
Conception of the second	1 or 2** 1 or 2** 1 or 2** 1 or 2** 1 or 2** 1 or 2** 1 or 2**	12% 15%
Exclogy Ecology E	1 012 7 1 1 1 or 2** 1 0r 2** 1 1 9 1 1 1	12%
Conception C	1 of 2 7 1 1 or 2** 1 or 2** 1 1 9 1 1 1 1 5	12%
Conception of the second produce invertibility of the second produce invertibility in an ecosystem is a balance between competing effects. abiodiversity is the sum total of different kinds of organisms cfluctuations in population size in an ecosystem resulting from cfluctuations in population size in an ecosystem are dwater, carbon, and nitrogen cycle between abiotic resources ea vital part of an ecosystem is the stability of its producers fat each link in a food web some energy is stored in newly Evolution The frequency of an allele in a gene pool of a population anatural selection acts on the phenotype rather than the bataleles that are lethal in a homozygous individual may be c cavaitation within a species increases the likelihood that 8. Evolution is the result of genetic changes abow natural selection determines the differential survival of	1 7 1 1 or 2** 1 or 2** 1 9 1 1 1 1 1 5 5	12%
Conception Concepting Concepting Concepting Concepting Concepting C	1 012 7 1 1 07 2** 1 07 2** 1 1 07 2** 1 1 1 1 1 5 1 1 1	12%
Conception C	1 07 2 7 1 1 07 2** 1 07 2** 1 07 2** 1 1 9 1 1 1 5 1 1 1 1 5 1 1 1 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1	12%
Conception of the second	102 7 1 102** 102** 1 1 1 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12%
Conception Concepting Concepting Concepting Concepting Concepting C	1 7 1 1 1 or 2** 1 1 or 2** 1 1 n 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12%
Conserve the second secon	7 7 1 1 or 2** 1 or 2** 1 1 1 1 1 1 1 5 1 1 1 1 1 1 1 1 1 1 1	12% 15%
Consequence engineering is used to produce invertibility in an ecosystem is a balance between competing effects. Ecology Stability in an ecosystem is a balance between competing effects. Abiodiversity is the sum total of different kinds of organisms Muctuations in population size in an ecosystem resulting from Cfluctuations in population size in an ecosystem are Awater, carbon, and nitrogen cycle between abiotic resources Ea vital part of an ecosystem is the stability of its producers Fat each link in a food web some energy is stored in newly Evolution The frequency of an allele in a gene pool of a population anatural selection acts on the phenotype rather than the balleles that are leftal in a homozygous individual may be Cnew mutations are constantly being generated in a gene pool. dvariation within a species increases the likelihood that B. Evolution is the result of genetic changes ahow natural selection determines the differential survival of ba great diversity of species increases the chance that at least cthe effects of genetic drift on the diversity of organisms in a dreproductive or geographic isolation affects speciation. e analyze fossil evidence with regard to biological diversity Physiology	1012 7 1 1 or 2** 1 or 2** 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12% 15%
Conception C	102 7 1 1 or 2** 1 or 2** 1 1 1 9 9 1 1 1 1 1 1 1 1 1 1 1 1 1 2/3***	12% 15%
Conception Concepting Concepting Concepting Concepting Concepting C	102 7 1 1 or 2** 1 1 or 2** 1 1 1 5 1	12% 15%
Consequence Consequen	1 012 7 1 1 07 2** 1 07 2** 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12% 15% 17%
Conception C	102 7 1 1 or 2** 1/3***	12% 15%
Conception C	102 7 1 1 or 2** 1 1 or 2** 13***	12% 15%
Conception Concepting Concepting Concepting Concepting Concepting C	1 0r 2* 7 1 1 or 2** 1 or 2** 1 1 1 1 1 1 1 1 1 1 1 1 1	12% 15%
Conception C	1 0r 2 7 1 1 or 2** 1 1 or 2** 1 1 1 9 9 1 1 1 1 1 1 1 1 1 1 1 1 1	12% 15%
Conception C	1012 7 1 1 or 2** 1 1 or 2** 1	12% 15%
Conception C	102 7 1 1 or 2** 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1/3*** 1 or 2‡ 1	12% 15%
Coupy Evolution Constraints C	1012 7 1 1 or 2** 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1/3*** 1 1/3*** 1	12% 15%

TOTAL * 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
1acells are enclosed within semipermeable membranes	2
1benzymes are proteins that catalyze biochemical reactions	2
1chow prokaryotic cells, eukaryotic cells, and viruses differ	2
1dthe central dogma of molecular biology	2
1ethe role of the endoplasmic reticulum and Golgi apparatus	1
1fusable energy is captured from sunlight by chloroplasts	2
1gthe role of the mitochondria	1
1h macromolecules in cells and organisms are synthesized	1
Genetics	16
4athe general pathway by which ribosomes synthesize	2
4bhow to apply the genetic coding rules to predict the	2
4cmutations in the DNA sequence of a gene may or may not	2
4dspecialization of cells in multicellular organisms is usually	2
4eproteins can differ from one another in the number and	2
5athe general structures and functions of DNA, RNA, and	2
5bhow to apply base-pairing rules to explain precise copying	2
5cgenetic engineering is used to produce novel biomedical	2
Evolution	1
7cnew mutations are constantly being generated in a gene pool.	1
MULTIPLE CHOICE ITEMS	30
CONSTRUCTED RESPONSE ITEM	4 pts
4athe general pathway by which ribosomes synthesize	
1dthe central dogma of molecular biology	
7cnew mutations are constantly being generated in a gene pool.	

PERIODIC ASSESSMENT #2

BIOLOGY CONTENT STANDARDS	# of
Cell Biology	3
1dthe central dogma of molecular biology	2
1fusable energy is captured from sunlight by chloroplasts	1
Genetics	13
2ameiosis is an early step in sexual reproduction	2
2bcertain cells in a multicellular organism undergo meiosis.	1
2crandom chromosome segregation explains the probability	2
2dnew combinations of alleles may be generated in a zygote	2
2ewhy approximately half of an individual's DNA sequence	1
2fthe role of chromosomes in determining an individual's sex.	1
2ghow to predict possible combinations of alleles in a zygote	1
3ahow to predict the probable outcome of phenotypes	2
3bthe genetic basis for Mendel's laws	1
Evolution	14
7anatural selection acts on the phenotype rather than the	1
7balleles that are lethal in a homozygous individual may be	2
7cmutations are constantly being generated in a gene pool.	2
7dvariation within a species increases the likelihood that	2
8anatural selection determines the differential survival of	1
8bdiversity of species increases the chance that at least	2
8cthe effects of genetic drift on the diversity of organisms in	1
8dreproductive 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
Pa natural selection determines the differential survival of	

Biology

Assessment OF Learning California Standards Tests:

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

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

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

	# of
BIOLOGI CONTENT STANDARDS	Items
Cell Biology	2
1acells are enclosed within semipermeable membranes	1
1dthe central dogma of molecular biology	1
Genetics	4
3bthe genetic basis for Mendel's laws	1
4athe general pathway by which ribosomes synthesize	1
4cmutations in the DNA sequence of a gene may or may not	1
5athe general structures and functions of DNA, RNA, and	1
Ecology	12
6abiodiversity is the sum total of different kinds of organisms	2
6bhow to analyze changes in an ecosystem resulting from	2
6cfluctuations in population size in an ecosystem are	3
6dwater, carbon, and nitrogen cycle between abiotic	2
6ea vital part of an ecosystem is the stability of its producers	1
6fat each link in a food web some energy is stored in newly	2
Evolution	4
7anatural selection acts on the phenotype rather than the	1
7balleles that are lethal in a homozygous individual may be	1
7cnew mutations are constantly being generated in a gene	1
7dvariation within a species increases the likelihood that	1
Physiology	18
9ahow the complementary activity of major body systems	2
9bhow the nervous system mediates communication	2
9chow feedback loops in the nervous and endocrine	3
9dthe functions of the nervous system and the role of	2
10athe role of the skin in providing nonspecific defenses	2
10bthe role of antibodies in the body's response to infection.	2
10chow vaccination protects an individual from infectious	2
10dthere are important differences between bacteria and	2
10ewhy an individual with a compromised immune system	1
TOTAL MULTIPLE CHOICE ITEMS	40
CONSTRUCTED RESPONSE ITEM	4 pts
6bhow to analyze changes in an ecosystem resulting from	

Chemistry

Assessment OF Learning California Standards Tests:

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

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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
1arelate the position of an element in the periodic table to its atomic	2
1buse the periodic table to identify metals, semimetals, nonmetals	2
1cuse the periodic table to identify alkali metals, alkaline earth metals	3
1duse the periodic table to determine the number of electrons	2
1ethe nucleus of the atom is much smaller than the atom yet contains	2
1grelate the position of an element in the periodic table to its quantum	1
1hthe experimental basis for Thomson's discovery of the electron	1
1ithe experimental basis for the development of the quantum theory	1
Chemical Bonds	12
2aatoms combine to form molecules by sharing electrons to formbonds	2
2bchemical bonds between atoms in molecules	2
2csalt crystals are repeating patterns of positive and negative ions	2
2dthe atoms and molecules in liquids move in a random pattern	2
2ehow to draw Lewis dot structures.	2
2fpredict the shape of simple molecules and their polarity from Lewis	1
2hidentify solids and liquids held together by Van der Waals forces or	1
Conservation of Matter and Stoichiometry	4
3ahow to describe chemical reactions by writing balanced equations.	2
3bthe quantity one mole is set by defining one mole of carbon 12	1
3cone mole equals 6.02 x 10 ²³ particles (atoms or molecules).	1
MULTIPLE CHOICE ITEMS	30
CONSTRUCTED RESPONSE ITEM	4 pts
3ahow to describe chemical reactions by writing balanced equations.	

PERIODIC ASSESSMENT #2

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

CALIFORNIA CONTENT STANDARDS: CHEMISTRY*	# of	%
	Items	
Atomic and Molecular Structure	6	10.0%
 The periodic table displays the elements in increasing atomic number 		
arelate the position of an element in the periodic table to its atomic	1	
number and atomic mass.		
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 electrone qualitable	1	
uuse 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	1	
most of its mass.		
Chemical Bonds	7	11.7%
Biological, chemical, and physical properties of matter		
a atoms combine to form molecules by sharing electrons to form bonds	2	
 chemical bonds between atoms in melacules 	1	
bchemical bonds between atoms in molecules		
csait crystais are repeating patterns or positive and negative ions		
dthe atoms and molecules in liquids move in a random pattern	1	
ehow 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	
bthe qualitaty one mole is set by defining one mole of carbon 12 atoms		
cone mole equals 6.02 x 10 particles (atoms or molecules).	1	
dnow to determine the molar mass of a molecule from its chemical	3	
ehow 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 collicions with a surface	1	
athe random motion of molecules and their comsions with a surface		
bthe random motion of molecules explains the diffusion of gases.	1	
chow to apply the gas laws to relations between the pressure	2	
dthe values and meanings of standard temperature and pressure (STP).	1	
ehow to convert between the Celsius and Kelvin temperature scales.	1/2***	
f there is no temperature lower than 0 Kelvin	1/2***	
Asida and Bases	1/2	0.20/
Acius aliu bases	5	0.3%
Acids, bases, and salts are three classes of compounds that form ions		
 athe observable properties of acids, bases, and salt solutions. 	2	
bacids are hydrogen-ion-donating and bases are hydrogen-ion	1	
cstrong 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	
Ochidiana	-	E 00/
Solutions	3	5.0%
Solutions are homogenous mixtures of two or more substances.		
 athe definitions of solute and solvent. 	1	
bhow to describe the dissolving process at the molecular level	1	
ctemperature, pressure, and surface area affect the dissolving process.	1/2***	
d how to calculate the concentration of a solute	1/2***	
Chamical Thermodynamica	5	0.20/
Chemical memodynamics	5	0.3%
Energy is exchanged or transformed in all chemical reactions and		
ahow to describe temperature and heat flow in terms of the motion of	1	
 ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. 	1	
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. c. energy is released when a material condenses or freezes and is.	1 1 1	
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. cenergy is released when a material condenses or freezes and is d. how to solve prohibers involving heat flow and temperature changes	1 1 1 2	
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Descine Descine Temperature changes	1 1 1 2	6 7%
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absort hermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates	1 1 2 4	6.7%
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates S. Chemical reaction rates depend on factors that influence the frequency	1 1 2 4	6.7%
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absort hermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates 8. Chemical reaction rates depend on factors that influence the frequency athe rate of reaction is the decrease in concentration of reactants or	1 1 2 4 1	6.7%
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. Cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates Chemical reaction rates depend on factors that influence the frequency athe rate of reaction is the devense in concentration of reactants or bhow reaction rates depend on such factors as concentration	1 1 2 4 1 1 or 2**	6.7%
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absort hermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates 8. Chemical reaction rates depend on factors that influence the frequency bhow reaction rates depend on such factors as concentration bhow reaction rates depend on such factors as concentration bhow reaction rates depend on the reacton rate.	1 1 2 4 1 1 or 2** 1 or 2**	6.7%
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates Chemical reaction rates depend on factors that influence the frequency athe rate of reaction is the decrease in concentration of reactants or bhow reaction rates depend on such factors as concentration C. Chemical real-involve plays in increasing the reaction rate. Chemical real-influence	1 1 2 4 1 1 or 2** 1 or 2** 4	6.7%
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absort hermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates 8. Chemical reaction rates depend on factors that influence the frequency bhow reaction rates depend on such factors as concentration of reactants or bhow reaction rates depend on such factors as concentration cthe role catalyst plays in increasing the reaction rate. Chemical Equilibrium A Changing enuity is a dynamic process of the meaning factor.	1 1 2 4 1 1 or 2** 1 or 2** 4	6.7%
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates Chemical reaction rates depend on factors that influence the frequency athe rate of reaction is the decrease in concentration of reactants or bbow reaction rates depend on such factors as concentration C. Chemical equilibrium Orden a dynamic process at the molecular level.	1 1 2 4 1 or 2** 1 or 2** 4	6.7% 6.7%
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absort thermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates athe rate of reaction is the decrease in concentration of reactants or bhow reaction rates depend on factors that influence the frequency cthe role a catalyst plays in increasing the reaction rate. Chemical Equilibrium is a dynamic process at the molecular level. ahor use LeChatelier's principle to predict the effect of changes	1 1 2 4 1 1 or 2** 1 or 2** 4 3	6.7% 6.7%
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates chemical reaction rates depend on factors that influence the frequency athe rate of reaction is the decrease in concentration of reactants or cbernoid expendion is used before a concentration cthe role a catalyst plays in increasing the reaction rate. Chemical equilibrium is a dynamic process at the molecular level. ahow to use LeChateler's principle to predict the effect of changes b bb	1 1 2 4 1 1 or 2** 1 or 2** 4 3 1	6.7% 6.7%
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absort thermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates athe rate of reaction is the decrease in concentration of reactants or bhow reaction rates depend on factors that influence the frequency cthe role a catalyst plays in increasing the reaction rate. Chemical Equilibrium G. Chemical Equilibrium is a dynamic process at the molecular level. ahor to use LeChateler's principle to predict the effect of changes D. chemical equilibrium is a dynamic process at the molecular level. Ghor ole use LeChateler's principle to predict the effect of changes Draguit Chemistry and Biochemistry	1 1 2 4 1 or 2** 1 or 2** 4 3 1 2	6.7% 6.7% 3.3%
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates describe the decrease in concentration of reactants or athe rate of reaction rates depend on such factors as concentration c. Chemical reactor rates depend on such factors as concentration cthe role a catalyst plays in increasing the reaction rate. Chemical equilibrium is a dynamic process at the molecular level. ahow to use LeChatelier's principle to predict the effect of changes Dranic Chemistry and Biochemistry 10. The bonding characteristics of carbon allow the formation of many	1 1 2 4 1 or 2** 1 or 2** 4 3 1 2	6.7% 6.7% 3.3%
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absort thermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates athe rate of reaction is the decrease in concentration of reactants or bhow reaction rates depend on factors that influence the frequency cthe role a catalyst plays in increasing the reaction rate. Chemical Equilibrium G. Chemical Equilibrium S. Chemical exclusion is a dynamic process at the molecular level. ahor use LeChatelier's principle to predict the effect of changes D. graphic Chemistry The bonding characteristics of carbon allow the formation of many aander alloguide placeling sources.	1 1 2 4 1 1 or 2** 4 3 1 2	6.7% 6.7% 3.3%
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absort hermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates describe the decrease in concentration of reactants or athe rate of reaction rates depend on such factors as concentration c. Chemical reactor rates depend on such factors as concentration cthe role a catalyst plays in increasing the reaction rate. Chemical equilibrium is a dynamic process at the molecular level. abow to use LeChatelier's principle to predict the effect of changes Dranic Chemistry and Biochemistry 10. The bonding characteristics of carbon allow the formation of many aarge molecules (polymers), such as proteins, nucleic acids, and stark are formed	1 1 2 4 1 or 2** 1 or 2** 4 3 1 2 2	6.7% 6.7% 3.3%
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absort thermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates athe rate of reaction is the decrease in concentration of reactants or bhow reaction rates depend on factors that influence the frequency cthe role a catalyst plays in increasing the reaction rate. Chemical equilibrium is a dynamic process at the molecular level. ahor use LeChatelier's principle to predict the effect of changes bbow use LeChatelier's principle to predict the effect of changes crapation rates The bonding characteristics of carbon allow the formation of many alarge molecules (polymers), such as proteins, nucleic adds, and starch, are formed b. be bonding characteristics of patients that predist, and	1 1 2 4 1 1 or 2** 4 3 1 2 2 1	6.7% 6.7% 3.3%
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ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absort thermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates dhow to solve problems involving heat flow and temperature changes dhow to solve problems involving heat flow and temperature changes dhow to solve problems involving heat flow and temperature changes dhow to solve problems involving heat flow and temperature changes dhow to selve foreaction is the decrease in concentration of reactants or dhow reaction rates depend on such factors as concentration dhow reaction rates depend on such factors as concentration dhow reaction rates depend on such factors as concentration dhow to use LeChatelier's principle to predict the effect of changes d. The bonding characteristics of carbon allow the formation of many alarge molecules (polymers), such as proteins, nucleic adds, and starch, are formed dthe bonding characteristics of carbon that result in the formation of a large variety of camino adds are the building blocks of proteins. Nuclear Processes 11. Nuclear processes are those in which an atomic nucleus changes agrotons and neutrons in the nucleus are radioactive, as are isotopers dthe three most common forms of radioactive decayand how the nucleus changes d	1 1 1 1 2 4 1 1 or 2** 1 or 2** 4 3 1 1/2*** 2 2/5*** 2/5*** 2/5*** 2/5*** 60	6.7% 6.7% 3.3% 3.3%
ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absort thermal energy. cenergy is released when a material condenses or floezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates athe rate of reaction is the decrease in concentration of reactants or bhow reaction rates depend on factors that influence the frequency bhow reaction rates depend on such factors as concentration dthe rate of reaction is the decrease in concentration of reactants or bhow reaction rates depend on such factors as concentration dthe rate catalyst plays in increasing the reaction rate. Chemical equilibrium is a dynamic process at the molecular level. anow to use LeChatelier's principle to predict the effect of changes bequilibrium is established when forward and reverse reaction rates Organic Chemistry and Biochemistry 10. The bonding characteristics of carbon allow the formation of many alarge molecules (polymers), such as proteins, nucleic acids, and starch, are formed b b b	1 1 1 1 2 4 1 1 or 2** 1 or 2** 4 3 1 2 1 1/2*** 2/5*** 2/5*** 2/5*** 60	6.7% 6.7% 3.3% 3.3%

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

Chemistry

of Items

%

Assessment OF Learning California Standards Tests:

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

CALIFORNIA CONTENT STANDARDS: CHEMISTRY*

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
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
Acide and Bees	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
6a. the relationship between the molality of a solute in a solution and the	1
Chemical Thermodynamics	0
Ta how to describe temperature and heat flow in terms of the motion of	2
The shaming processes can either release or shearh thermal energy	2
70chemical processes can entre release of absolutinemal energy.	2
7cenergy is released when a material condenses of freezes and is	2
70 now to solve problems involving near now and temperature changes	2
Redclion Rales	2
Odtille Tate of reaction is the decrease in concentration of reactants of	2
Pa the role a patalvat plave in increasing the reaction rote	2
octhe fold a catalyst plays in increasing the reaction rate.	2
Organia Chamiata and Risabamiata	7
10a Jarga malagulas (palumora), such as proteins, public acida, and	2
10alarge molecules (polymers), such as proteins, nucleic acius, anu	2
100the bonding characteristics of carbon that result in the formation of	2
10camino acids are the building blocks of proteins.	
100system for naming the ten simplest linear hydrocarbons and	1
Tottile R-group structure of anniho acids and know now they combine	0
Nuclear Processes	8
11aprotons and neutrons in the nucleus are held together by huclear	
11bthe energy release per gram or material is much larger in nuclear	1
11. Some naturally occurring isotopes or elements are radioactive, as	2
i i.uthe three most common forms of radioactive decayand how the	2
11eaipna, beta, and gamma radiation produce different amounts and	1
111calculate the amount of a radioactive substance remaining after an	1
TOTAL MULTIPLE CHOICE ITEMS	40
	4

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

Atomic and Molecular Structure	6	10.0%
 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	
he use the periodic table to identify metals, commetals, nonmetals	4	
buse the periodic table to identify metals, semimetals, nonmetals	-	
cuse the periodic table to identify alkali metals, alkaline earth metals	2	
duse 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	1	
most of its mass.	1	
Chemical Bonds	7	11 7%
0. Bislasias abarrias and abarrias and an article of matter	,	11.770
2. Biological, chemical, and physical properties of matter		
 aatoms combine to form molecules by sharing electrons to formbonds 	2	
bchemical bonds between atoms in molecules	1	
csalt crystals are repeating patterns of positive and negative ions	1	
d the atoms and molecules in liquids move in a random nattern	1	
 bow to draw Lowis dot structures 	2	
Contraction of Matter and Otsichionates	2	40 70/
Conservation of Matter and Stoicniometry	10	10.7%
The conservation of atoms in chemical reactions		
 ahow 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 male equals 6.02 x 10 ²³ particles (atoms or malecules)	1	
cone mole equals 0.02 x 10 particles (atoms of molecules).		
dnow to determine the molar mass of a molecule from its chemical	3	
ehow to calculate the masses of reactants and products in a chemical	3	
Gases and Their Properties	6	10.0%
The kinetic molecular theory describes the motion of atoms and		
a the random motion of molecules and their collisions with a surface	1	
a the random motion of molecules and their completes will a sufficient	4	
bthe random motion of molecules explains the diffusion of gases.		
chow to apply the gas laws to relations between the pressure	2	
dthe values and meanings of standard temperature and pressure (STP).	1	
ehow to convert between the Celsius and Kelvin temperature scales.	1/2***	
f there is no temperature lower than 0 Kelvin	1/2***	
Asida and Dassa	1/2	0.00/
Acids and Bases	5	8.3%
Acids, bases, and salts are three classes of compounds that form ions		
athe observable properties of acids, bases, and salt solutions.	2	
bacids are hydrogen-ion-donating and bases are hydrogen-ion	1	
c strong acids and bases fully dissociate and weak acids and bases	1	
d	-	
dhow to use the pH scale to characterize acid and base solutions.	1	
Solutions	3	5.0%
Solutions 6. Solutions are homogenous mixtures of two or more substances.	3	5.0%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent.	3	5.0%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. b. how to describe the discolving process at the molecular level.	3	5.0%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level	3	5.0%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process.	3 1 1 1/2***	5.0%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute	3 1 1/2*** 1/2***	5.0%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermdoynamics	3 1 1/2*** 1/2*** 5	5.0% 8.3%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermodynamics 7. Enerov is exchanged or transformed in all chemical reactions and	3 1 1/2*** 1/2*** 5	5.0% 8.3%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermdoynamics 7. Energy is exchanged or transformed in all chemical reactions and a. how to describe temperature and beat flow in terms of the molion of	3 1 1/2*** 1/2*** 5 1	5.0% 8.3%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermodynamics 7. Energy is exchanged or transformed in all chemical reactions and ahow to describe temperature and heat flow in terms of the motion of b. behende beenergee a tither actional or homology of thermology of the solute	3 1 1/2*** 1/2*** 5 1	5.0% 8.3%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermodynamics 7. Energy is exchanged or transformed in all chemical reactions and ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy.	3 1 1/2*** 1/2*** 5 1 1 1	5.0% 8.3%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermodynamics 7. Energy is exchanged or transformed in all chemical reactions and ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. cenergy is released when a material condenses or freezes and is	3 1 1/2*** 1/2*** 5 1 1 1 1	5.0% 8.3%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermodynamics 7. Energy is exchanged or transformed in all chemical reactions and ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. Cenergy is released when a material condenses or freezes and is chow to solve problems involving heat flow and temperature changes	3 1 1/2*** 5 1 1 1 2	<u>5.0%</u> 8.3%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermodynamics 7. Energy is exchanged or transformed in all chemical reactions and bchemical processes can either release or absorb themal energy. cempret problems involving heat flow and temperature changes dhow to solve problems involving heat flow and temperature changes Reaction Rates	3 1 1/2*** 5 1 1 1 1 2 4	5.0% 8.3% 6.7%
Solutions Solutions actions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermodynamics 7. Energy is exchanged or transformed in all chemical reactions and ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. cenergy is released when a material condenses or freezes and is Reaction Rates B. Chemical reaction gates depend on factors that injugnee the frequency.	3 1 1/2*** 1/2*** 5 1 1 1 1 2 4	5.0% 8.3% 6.7%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermodynamics 7. Energy is exchanged or transformed in all chemical reactions and ahow to describe temperature and heat flow in terms of the motion of bhow to describe temperature and heat flow in terms of the motion of cemergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates 8. Chemical reaction rates depend on factors that influence the frequency	3 1 1/2*** 1/2*** 5 1 1 1 1 2 4	5.0% 8.3% 6.7%
Solutions Solutions actions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermodynamics 7. Energy is exchanged or transformed in all chemical reactions and ahow to be calculate the molecular level in terms of the motion of bchemical processes can either release or absorb thermal energy. cenergy is released when a material condenses or freezes and is Reaction Rates 8. Chemical reaction rates depend on factors that influence the frequency ather ate of reaction is the decrease in concentration of reactants or	3 1 1/2*** 5 1 1 1 2 4	5.0% 8.3% 6.7%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermodynamics 7. Energy is exchanged or transformed in all chemical reactions and ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. cenergy is released when a material condenses or freezes and is f. eaction Rates 8. Chemical reaction rates depend on factors that influence the frequency ahow to solve problems involving heat flow and temperature changes Reaction Rates 6. Chemical reaction rates depend on factors that influence the frequency ahow to solve problems depend on such factors as concentration.	3 1 1/2*** 5 5 1 1 1 2 4 1 1 or 2**	5.0% 8.3% 6.7%
Solutions Solutions Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level Ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermodynamics 7. Energy is exchanged or transformed in all chemical reactions and ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. Cenergy is released when a material condenses or freezes and is Reaction Rates 8. Chemical reaction rates depend on factors that influence the frequency ahow teaction rates depend on factors that influence the frequency bhow reaction rates depend on such factors as concentration cther of a catalays flays in increasing the reaction rate.	3 1 1/2*** 1/2*** 5 1 1 1 1 2 4 4 1 1 or 2** 1 or 2**	5.0% 8.3% 6.7%
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Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermodynamics 7. Energy is exchanged or transformed in all chemical reactions and ahow to describe temperature and heat flow in terms of the motion of bhowing processes can either release or absorb thermal energy. cenergy is released when a material condenses or freezes and is 8. Chemical reaction rates depend on factors that influence the frequency athe rate of reaction is the decrease in concentration of reactants or bhow reaction rates depend on such factors as concentration cthe role a catalyst plays in increasing the reaction rate. Chemical Equilibrium 9. Chemical equilibri	3 1 1/2*** 1/2*** 5 1 1 1 1 2 4 4 1 1 or 2** 1 or 2** 4	5.0% 8.3% 6.7%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical thermodynamics 7. Energy is exchanged or transformed in all chemical reactions and ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates 8. Chemical reaction rates depend on factors that influence the frequency aher rele of reaction is the decrease in concentration Cher releation rates depend on such factors as concentration Cher role a catalyst plays in increasing the reaction rate. Chemical equilibrium is a dynamic process at the molecular level.	3 1 1/2*** 1/2*** 1 1 1 1 2 4 1 1 or 2** 4 2	5.0% 8.3% 6.7% 6.7%
Solutions 6. Solutions are homogenous mixtures of two or more substances. ahow to describe the dissolving process at the molecular level bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermodynamics 7. Energy is exchanged or transformed in all chemical reactions and ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absort thermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates 8. Chemical reaction rates depend on factors that influence the frequency ahow reaction rates depend on such factors as concentration cmerete of reaction is the decrease in concentration freadants or bbemical equilibrium 9. Chemical Equilibrium is a dynamic process at the molecular level. anow to use LeChatelier's principle to predict the effect of changes	3 1 1/2*** 1/2*** 5 1 1 1 1 2 4 1 1 or 2** 4 3	5.0% 8.3% 6.7% 6.7%
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Solutions Solutions Solutions Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level Chemical Thermodynamics T. Energy is exchanged or transformed in all chemical reactions and ahow to calculate the concentration of a solute Chemical Thermodynamics T. Energy is exchanged or transformed in all chemical reactions and ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. Cenergy is released when a material condenses or freezes and is Bchemical processes can either release or absorb thermal energy. Cenergy is released when a material condenses or freezes and is Bchemical processes can either release or absorb thermal energy. Cenergy is released when a material condenses or freezes and is Bchemical reaction rates depend on factors that influence the frequency bbemical reaction is the decrease in concentration of reactants or bbow to eactalyst plays in increasing the reaction rate. Chemical Equilibrium G. Chemical equilibrium is a dynamic process at the molecular level. ahow to use LeChatelier's principle to predict the effect of changes b bdow to use tablished when forward and reverse reaction rates creates Creates Creates Creates Chemical reaction rates	3 1 1/2*** 1/2*** 5 1 1 1 2 4 1 1 or 2** 4 1 or 2** 4 3 1 2	5.0% 8.3% 6.7% 6.7% 3.3%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermodynamics 7. Energy is exchanged or transformed in all chemical reactions and ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. cenergy is released when a material condenses or freezes and is 8. Chemical tractions is the decrease in concentration of reactants or bbow to solve problems involving heat flow and temperature changes Reaction Rates 6. Chemical enaction is the decrease in concentration of reactants or bbow traction rates depend on factors that influence the frequency ahow to use LeChatelier's principle to predict the effect of changes Chemical equilibrium 9. Chemical equilibrium is a dynamic process at the molecular level. ahow to use LeChatelier's principle to predict the effect of changes Crganic Chemistry and Biochemistry	3 1 1/2*** 1/2*** 5 1 1 1 2 4 1 1 or 2** 4 3 1 2	5.0% 8.3% 6.7% 6.7%
Solutions 6. Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermodynamics 7. Energy is exchanged or transformed in all chemical reactions and ahow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absort thermal energy. cenergy is released when a material condenses or freezes and is dhow to solve problems involving heat flow and temperature changes Reaction Rates 8. Chemical reaction rates depend on factors that influence the frequency ahow reaction rates depend on such factors as concentration cther ole a catalyst plays in increasing the reaction rate. Chemical Equilibrium 9. Chemical equilibrium is a dynamic process at the molecular level. anow to use LeChatelier's principle to predict the effect of changes Dreamical equilibrium is a dynamic process at the molecular level. anow to use LeChatelier's principle to predict the effect of rades Dreamical equilibrium is a dynamic proces	3 1 1/2*** 1/2*** 5 1 1 1 2 4 4 1 1 or 2** 4 3 1 2	5.0% 8.3% 6.7% 6.7% 3.3%
Solutions Solutions Solutions Solutions are homogenous mixtures of two or more substances. athe definitions of solute and solvent. bhow to describe the dissolving process at the molecular level Ctemperature, pressure, and surface area affect the dissolving process. dhow to calculate the concentration of a solute Chemical Thermdoynamics 7. Energy is exchanged or transformed in all chemical reactions and aow to calculate the concentration of a solute Chemical Thermdoynamics 7. Energy is exchanged or transformed in all chemical reactions and aow to describe temperature and heat flow in terms of the motion of bchemical processes can either release or absorb thermal energy. Cenergy is released when a material condenses or freezes and is Reaction Rates 8. Chemical reaction rates depend on factors that influence the frequency ahow to solve problems involving heat flow and temperature changes Reaction Rates 9. Chemical exclining in the decrease in concentration of reactants or bhow reaction rates depend on factors that influence the frequency cenerging includes the decrease in concentration bhow to action rates depend on such factors as concentration cthe role a catalyst plays in increasing the reaction rate. Chemical equilibrium 9. Chemical equilibrium is a dynamic process at the molecular level. ahow to use LeChatelier's principle to predict the effect of changes Organic Chemistry and Biochemistry 10. The bonding characteristics of carbon allow the formation of many aarge molecules (polymers), such as proteins, nucleic acids, and starb. are formed	3 1 1/2*** 1/2*** 5 1 1 1 1 2 4 1 1 1 2 3 1 2 1 2 1 1 2 1 1 2 1 1 1 2 1 2 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1	5.0% 8.3% 6.7% 6.7% 3.3%
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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