



GRADE

8

# Instructional Materials

for the

# CRITERION REFERENCED TEST

Nevada

Grade 8

SCIENCE

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Dear Educators,

The following materials, developed as a collaborative effort between the Nevada Department of Education and WestEd, a nonprofit research, development, and service agency, are designed to be used as part of a guided instructional activity to support student performance on assessments. While these materials can provide students with practice in answering assessment items, we believe it is critical that these materials be used to help students understand the elements of the state assessment and to guide them in the use of effective strategies that will support their ability to comprehend and take a variety of assessments. If you choose, however, to use this support document solely as a practice activity, we highly recommend that you go back over each item with students and investigate each response to better understand their knowledge of the assessment.

### **Types of Items**

The science test includes two types of items—multiple choice items for all grades (5th, 8th, and high school) and constructed-response items for grades 5 and 8. To help prepare students for the constructed-response items we have provided:

1. the student checklist (included in the test booklet for grade 5)
2. the general student rubric (included in the test booklet for grade 8)
3. item-specific rubrics

With the use of these materials, students can become familiar with the different types of questions used on the state assessments. They can learn to use the checklist or rubric to determine if they have answered the constructed-response questions completely. Familiarity with the tools provided as part of the test and the vocabulary of the standards can result in less anxiety on the part of students. Please note that the student checklist and general rubric can be on the walls of your classroom throughout the school year. As you assign constructed-response questions, students can use these tools as they develop their answers. The types of questions included in these instructional materials allow for the assessment of different levels of depth of knowledge in the content areas defined by the standards. The different Depth of Knowledge (DOK) levels are explained below. The questions are developed so that students can demonstrate scientific thinking at multiple DOK levels. Teaching students to identify, write, and use different levels of questioning skills as they assess various scientific concepts will likely lead to improved student achievement on classroom, district, state, and national assessments. We hope that the use of these materials will assist in the creation of students who are powerful scientific thinkers.

## Depth of Knowledge (DOK) Levels

In addition to measuring a broad spectrum of science content domains, the Nevada Proficiency Examination Program in science includes items to assess three Depth of Knowledge levels. These DOK levels are based on descriptions developed by Dr. Norman Webb and adapted for Nevada's science assessments. The following are the three DOK levels used on state-level assessments in Nevada:

**DOK 1 - Recall** - Items at the DOK 1 level require the **recall** of information, such as a fact, definition, term, or simple procedure, as well as performing a **simple** science process or procedure. Level 1 only requires students to demonstrate a rote response, use a well-known formula, follow a set procedure (like a recipe), or perform a clearly defined series of steps. DOK 1 items may also require that students employ a simple procedure or formula to **reproduce** a previously learned result. It is not left to the student to come up with an original method or solution.

**DOK 2 - Skills and Concepts** - Items at the DOK 2 level require the engagement of some mental processing beyond recalling or reproducing a response. The content knowledge or process involved is **more complex** than in Level 1. DOK 2 Items require students to decide what to do, using methods of reasoning and problem-solving skills, and to bring together concepts and skills from various domains.

**DOK 3 - Strategic Thinking** - Items at the DOK 3 level require students to employ a higher level of thinking than at the previous two levels. **Strategic thinking** requires deep knowledge using **reasoning, planning, and evidence to support results**. The cognitive demands at Level 3 are **complex and abstract**. The complexity results not only from the fact that there could be multiple answers, a possibility for both Levels 1 and 2, but because a multi-step task requires more demanding reasoning.

## Science Content Literacy

The Department of Education believes that the breadth and depth of the content and vocabulary of the Nevada Science Content and Achievement indicators present a continuing challenge for instruction at all grade levels. It is not unusual for grade-appropriate, content-specific terminology and vocabulary to be required for instruction prior to these same terms being used in the classroom.

Students in Nevada, therefore, must have repeated experiences with **hearing** (oral vocabulary), **reading**, and **writing** the vocabulary of the standards in order to be successful on the state assessment as well as in classroom and district assessments. Make sure that your students know the language of the standards that are being assessed. They should be able to recognize the vocabulary of the standards when you discuss them in class and read them in assessments, and they should be able to effectively use the vocabulary in their writing. This will be especially useful when students are working on the constructed-response items of the state assessment.

We hope that interaction with these instructional support materials will lead to lowered anxiety and better understanding of the assessment tasks being presented to students. If you have questions about the science instructional materials or about how to embed this information into your curriculum, please contact Dr. Richard Vineyard at [rvineyard@doe.nv.gov](mailto:rvineyard@doe.nv.gov) or call (775) 687-9195, and he will work with you on making these documents beneficial to you and your students.

Cindy Sharp  
K–12 CRT/HSPE Consultant  
Nevada Department of Education

Name: \_\_\_\_\_

# Science Grade 8

This booklet contains science questions for you to answer. There are two types of questions in this booklet. For the multiple-choice questions, you will be given four answer choices—A, B, C, and D. You are to choose the correct answer from the four choices. Each question has only one right answer. The written-response questions require you to give a written response to a question as indicated in the booklet. You will be given a separate sheet of paper to answer these questions.

You may use the rubric below to help you do a good job when you are answering the written-response questions.

<b>Score</b>	<b>Expectation</b>
<b>Full Credit</b>	Your response addresses all parts of the question clearly and correctly. Your response does not include any incorrect information.
<b>Partial Credit</b>	Your response addresses all parts of the questions. Your response includes only minor errors.
<b>Minimal Credit</b>	Your response does not address all parts of the question. OR Your response addresses all parts of the question, but it includes major errors.
<b>No Credit</b>	Insufficient information to score.

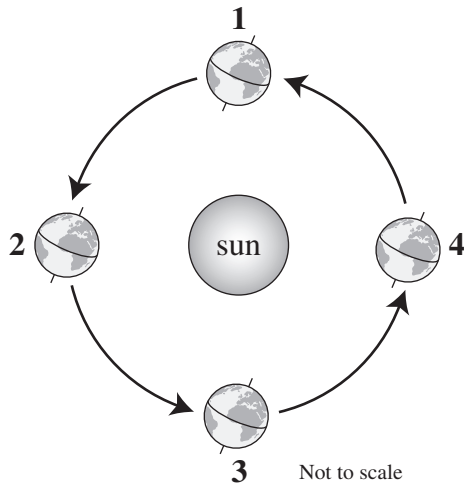
Y09\_SC0535

**1** Which of these forms of water has the **greatest** kinetic energy?

- A boiling water
- B melting water
- C freezing water
- D condensing water

Y09\_SC0555

**2** The diagram below shows four different positions of Earth during the year as it orbits the sun.

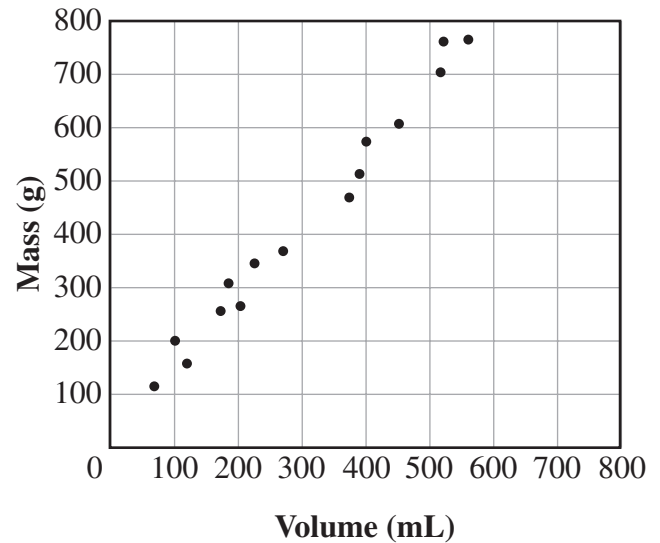


In which position is the northern hemisphere experiencing winter?

- A position 1
- B position 2
- C position 3
- D position 4

Y09\_SC0567

**3** A student collected many different-sized samples of the same kind of rock from a certain area. She measured the mass and volume of each sample and plotted the results on the scatter plot below.



Based on the scatter plot, which is the **best** estimate of the mass of a rock sample taken from the same area that has a volume of 300 mL?

- A 350 g
- B 450 g
- C 550 g
- D 650 g

Y09\_SC0642

**4** Which of these is an example of chemical energy being converted into thermal energy?

- A water boiling
- B butter melting
- C candles burning
- D steam condensing

Y09\_SC0538

**5**

The diagram below shows the Periodic Table of the Elements.

**Periodic Table of the Elements**

Group																		18	
		1											13	14	15	16	17		
1		1 <b>H</b> 1.008																	2 <b>He</b> 4.003
2		3 <b>Li</b> 6.94	4 <b>Be</b> 9.01											5 <b>B</b> 10.81	6 <b>C</b> 12.01	7 <b>N</b> 14.01	8 <b>O</b> 16.00	9 <b>F</b> 19.00	10 <b>Ne</b> 20.18
3		11 <b>Na</b> 22.99	12 <b>Mg</b> 24.31	3	4	5	6	7	8	9	10	11	12	13 <b>Al</b> 26.98	14 <b>Si</b> 28.09	15 <b>P</b> 30.97	16 <b>S</b> 32.06	17 <b>Cl</b> 35.45	18 <b>Ar</b> 39.95
4		19 <b>K</b> 39.10	20 <b>Ca</b> 40.08	21 <b>Sc</b> 44.96	22 <b>Ti</b> 47.90	23 <b>V</b> 50.94	24 <b>Cr</b> 52.00	25 <b>Mn</b> 54.94	26 <b>Fe</b> 55.85	27 <b>Co</b> 58.93	28 <b>Ni</b> 58.70	29 <b>Cu</b> 63.55	30 <b>Zn</b> 65.38	31 <b>Ga</b> 69.72	32 <b>Ge</b> 72.59	33 <b>As</b> 74.92	34 <b>Se</b> 78.96	35 <b>Br</b> 79.90	36 <b>Kr</b> 83.80
5		37 <b>Rb</b> 85.47	38 <b>Sr</b> 87.62	39 <b>Y</b> 88.91	40 <b>Zr</b> 91.22	41 <b>Nb</b> 92.91	42 <b>Mo</b> 95.94	43 <b>Tc</b> (97)	44 <b>Ru</b> 101.07	45 <b>Rh</b> 102.91	46 <b>Pd</b> 106.4	47 <b>Ag</b> 107.87	48 <b>Cd</b> 112.41	49 <b>In</b> 114.82	50 <b>Sn</b> 118.69	51 <b>Sb</b> 121.75	52 <b>Te</b> 127.60	53 <b>I</b> 126.90	54 <b>Xe</b> 131.30
6		55 <b>Cs</b> 132.91	56 <b>Ba</b> 137.33	*57 <b>La</b> 138.91	72 <b>Hf</b> 178.49	73 <b>Ta</b> 180.95	74 <b>W</b> 183.85	75 <b>Re</b> 186.21	76 <b>Os</b> 190.2	77 <b>Ir</b> 192.22	78 <b>Pt</b> 195.09	79 <b>Au</b> 196.97	80 <b>Hg</b> 200.59	81 <b>Tl</b> 204.37	82 <b>Pb</b> 207.2	83 <b>Bi</b> 208.98	84 <b>Po</b> (209)	85 <b>At</b> (210)	86 <b>Rn</b> (222)
7		87 <b>Fr</b> (223)	88 <b>Ra</b> 226.03	**89 <b>Ac</b> (227)	104 <b>Rf</b> (257)	105 <b>Db</b> (260)	106 <b>Sg</b> (263)	107 <b>Bh</b> (262)	108 <b>Hs</b> (265)	109 <b>Mt</b> (266)	—	—	—						

*Lanthanide Series	6	58 <b>Ce</b> 140.12	59 <b>Pr</b> 140.91	60 <b>Nd</b> 144.24	61 <b>Pm</b> (147)	62 <b>Sm</b> 150.4	63 <b>Eu</b> 151.96	64 <b>Gd</b> 157.25	65 <b>Tb</b> 158.93	66 <b>Dy</b> 162.50	67 <b>Ho</b> 164.93	68 <b>Er</b> 167.26	69 <b>Tm</b> 168.93	70 <b>Yb</b> 173.04	71 <b>Lu</b> 174.97
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**Actinide Series	7	90 <b>Th</b> 232.04	91 <b>Pa</b> 231.04	92 <b>U</b> 238.03	93 <b>Np</b> 237.05	94 <b>Pu</b> (244)	95 <b>Am</b> (243)	96 <b>Cm</b> (247)	97 <b>Bk</b> (247)	98 <b>Cf</b> (251)	99 <b>Es</b> (254)	100 <b>Fm</b> (257)	101 <b>Md</b> (258)	102 <b>No</b> (259)	103 <b>Lr</b> (260)
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Based on its location in the periodic table, which element in the table is **least** reactive?

- A Li
- B F
- C Ca
- D Kr



Y09\_SC0528

**6**

The picture below shows two mature plants.



The two plants were cross-pollinated and each plant produced seeds. Which statement **most** likely describes a characteristic of the offspring that will grow from the seeds produced by each plant?

- A The offspring will grow taller than the parent plants.
- B The offspring will have healthier leaves than the parent plants.
- C The offspring will produce fewer flowers than the parent plants.
- D The offspring will have light-colored flowers like the parent plants.

Y09\_SC0556

**7**

Which statement **best** describes how climate conditions in Nevada would be different if the tilt of Earth's axis was at  $0^\circ$ ?

- A The seasons in Nevada would be opposite from the current seasons.
- B Nevada would experience climate conditions that change very little throughout the year.
- C Climate conditions in Nevada would be coolest when Earth is closest to the sun.
- D Nevada would receive the most energy from the sun in the summer and the least in the winter.

Y09\_SC0566

**8**

During a classroom investigation, a teacher provided a group of students with four different containers of pure water.

The students were asked to measure the mass and volume of the water in each container and to calculate its density based on their measurements. The table below shows the results of their investigation.

### Results of a Student Investigation

Container	Mass (g)	Volume (mL)	Density (g/mL)
1	120.6	118.8	1.01
2	525.2	531.3	0.98
3	250.0	247.5	1.01
4	1001.7	991.8	1.00

Which of these statements is **best** supported by the data in the table?

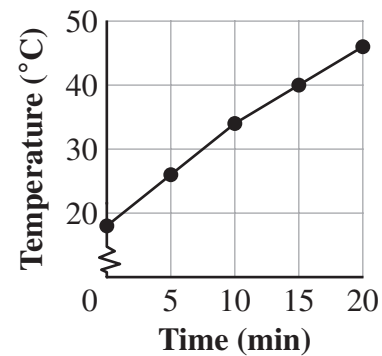
- A The density of pure water is independent of the container used to hold the water.
- B The density of pure water decreases as the mass of water in each container increases.
- C The density of pure water increases as the volume of water in each container decreases.
- D The density of pure water is dependent on the shape of each container holding the water.

Y09\_SC0562

**9**

During an investigation, a black piece of cloth is placed on a sidewalk on a sunny day. The temperature of the cloth is measured every five minutes for 20 minutes. The graph below shows the results of the investigation.

### Cloth Temperature



Which of these statements **best** explains the results shown in the graph?

- A The sun gives off heat energy, which is transferred to the sidewalk, and then the sidewalk transfers heat to the cloth.
- B The cloth reflects light energy from the sun, which expands the molecules in the cloth, and this expansion raises the cloth's temperature.
- C The sun gives off heat energy, which is transferred to the atmosphere, and the surrounding air transfers heat to the cloth.
- D The cloth absorbs electromagnetic energy from the sun, which increases the movement of molecules in the cloth, and this process raises the cloth's temperature.

Y09\_SC0565

**10**

A mining company has just developed a machine that removes more dirt per day than previous methods. Which is a negative consequence of the company using this technology?

- A The machine may require maintenance.
- B The machine will remove native grasses from the topsoil.
- C The machine works faster and longer than human labor.
- D The mining company will lose money at the beginning because the machine will cost so much.

Y09\_SC0584

**11**

Which part of the electromagnetic spectrum has frequencies that are **greater** than the frequency of visible light?

- A microwaves
- B infrared light
- C radio waves
- D ultraviolet light

Write your answer to Question 12 on a separate sheet of paper. Be sure to answer Parts A, B, and C.

Y09\_SC0467

**12**

Energy is released from methane during a combustion reaction. The equation below shows the substances involved in this reaction.



- A Identify **one** element that is involved in this reaction.
- B Identify **one** compound other than methane that is involved in this reaction.
- C Describe **one** piece of evidence that could be used to determine whether a substance is an element or a compound.



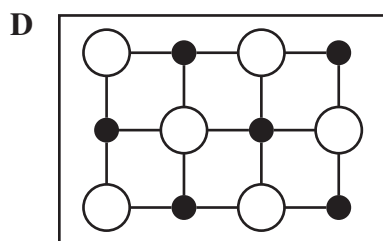
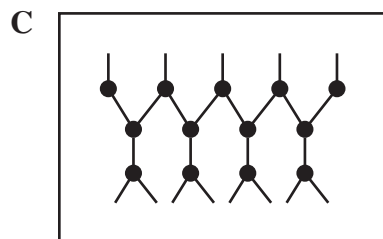
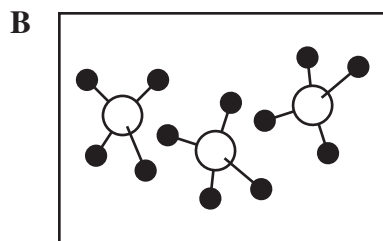
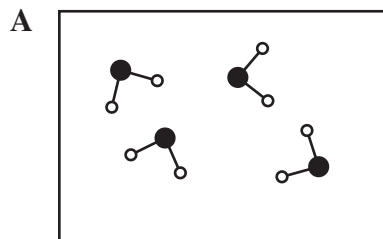
Y09\_SC0651

**13** Which infection of the human body can **most** likely be directly treated with an antibiotic?

- A a viral infection
- B a fungal infection
- C a protist infection
- D a bacterial infection

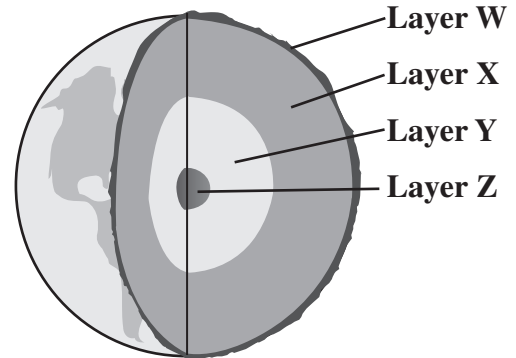
Y09\_SC0545

**14** Which of these diagrams **most** likely represents the chemical structure of a substance that is a pure element?



Y09\_SC0519

**15** The diagram below shows four layers of Earth's internal structure.



Which layer is composed mostly of solid iron and nickel?

- A layer W
- B layer X
- C layer Y
- D layer Z

Y09\_SC0602

**16** Which of these is an SI unit of measure for the mass of an object?

- A meter
- B ounce
- C milliliter
- D kilogram

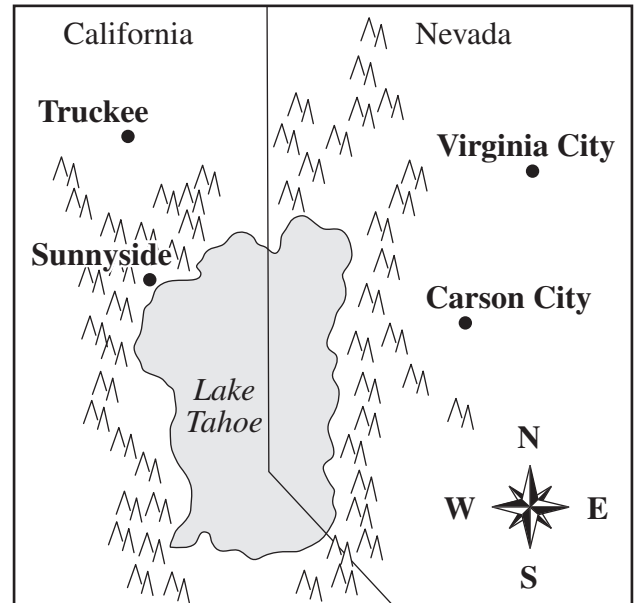
Y09\_SC0530

**17** Which situation is an example of an animal behavior that is **not** passed on genetically to the offspring of the animal?

- A a salmon swimming upstream to spawn
- B a squirrel moving toward a person to get food
- C a bird migrating to a warmer climate for winter
- D a baby turtle moving toward water after hatching

Y09\_SC0511

**18** The map below shows four cities that border Lake Tahoe.



Key	
•	City
^ ^	Mountains

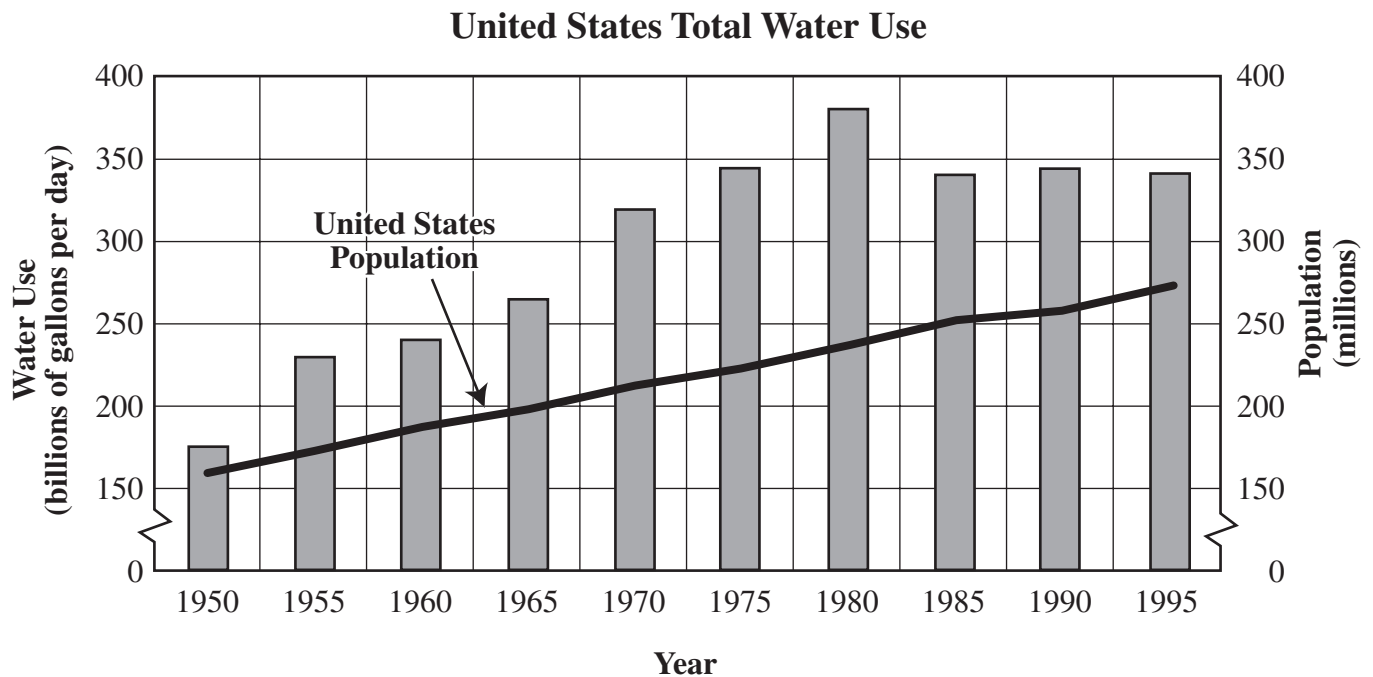
Which city **most** likely experiences lake effect snow?

- A Truckee, California
- B Virginia City, Nevada
- C Carson City, Nevada
- D Sunnyside, California

Y09\_SC0599

**19**

The graph below shows the United States population and the total water consumption in the United States from 1950 to 1995.



Based on the graph, which statement is a fact?

- A People used too much water between 1970 and 1985.
- B People have been finding better uses for water since 1985.
- C The average number of people who used water decreased after 1985.
- D The average amount of water each person used was lower in 1995 than in 1985.

Y09\_SC0641

**20**

The table below shows the speed of sound in different materials.

**Speed of Sound**

Material	Speed (m/s)
Air	343
Copper	3250
Titanium	4870
Water	1481

Based on the data in the table, which of these sounds will have the **longest** wavelength?

- A a sound with a frequency of 100 hertz moving through air
- B a sound with a frequency of 100 hertz moving through copper
- C a sound with a frequency of 500 hertz moving through titanium
- D a sound with a frequency of 500 hertz moving through water

Y09\_SC0527

**21**

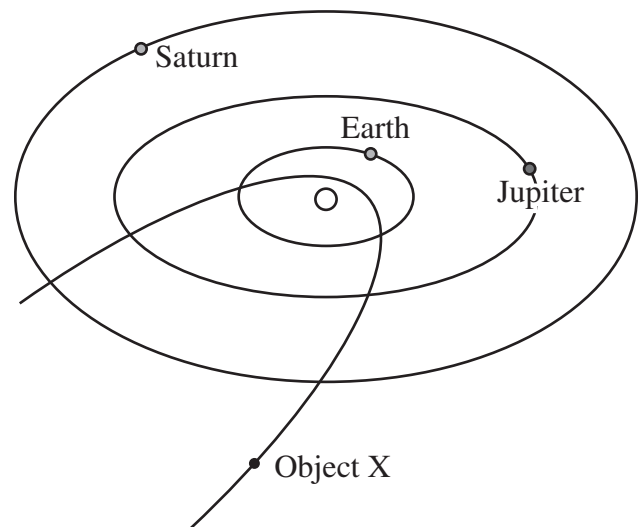
Which of these situations is an example of asexual reproduction?

- A Two organisms mate to produce offspring.
- B Specialized cells divide to produce gametes.
- C Crossbreeding of plants produces new varieties.
- D A single-celled organism divides to produce offspring.

Y09\_SC0512

**22**

The diagram below shows the orbits of some of the objects that orbit the sun within our solar system.



Object X in the diagram is **most** likely to be which type of astronomical object?

- A a moon
- B a planet
- C a comet
- D a meteorite

Y09\_SC0568

**23**

A science class measured the total amount of rainfall at their school each month from September through May. The total rainfall data is shown in the table below.

**Rainfall Data**

Month	Rainfall (cm)
September	0.2
October	0.5
November	1.4
December	2.2
January	3.3
February	2.1
March	1.7
April	1.0
May	0.9

Based on the data in the table, which of these statements is an **opinion**, rather than a fact?

- A January is the month that had the most rainfall.
- B May is the last month that rainfall data was collected.
- C September is the first month of the rainfall investigation.
- D April is the month that received the perfect amount of rainfall.

Y09\_SC0540

**24**

Which of these would be **best** to use to separate small iron filings from a mixture with sand?

- A a magnet
- B filter paper
- C a hot plate
- D running water

Y09\_SC0546

**25**

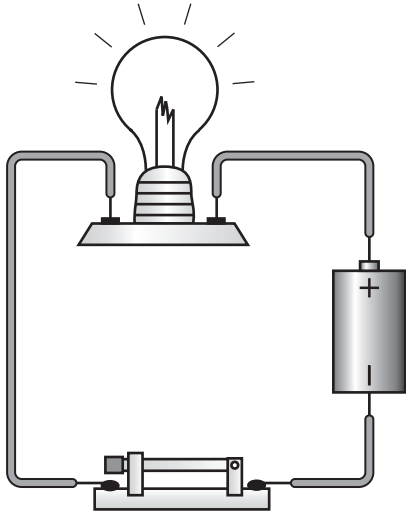
All living organisms are composed of which of the following?

- A cells
- B organs
- C tissues
- D muscles

Y09\_SC0563

**26**

The picture below shows an electrical circuit that a student constructed.



Which change would most likely **increase** the resistance in this circuit?

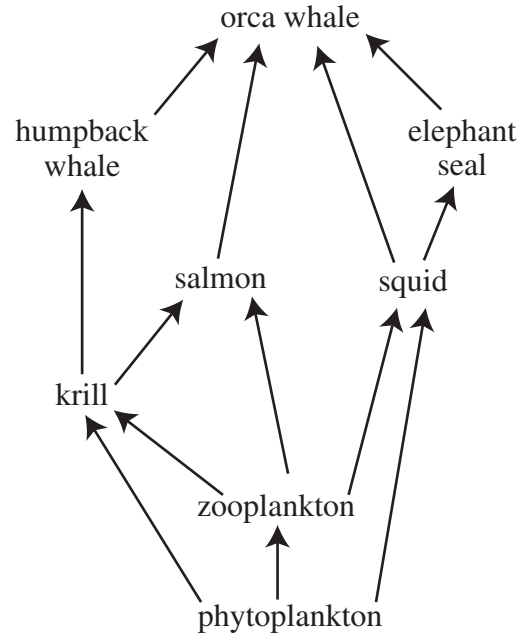
- A removing the switch
- B using shorter wires to make the connections
- C adding another light bulb
- D replacing the battery with a higher-voltage battery

Y09\_SC0652

**27**

The diagram below shows a partial food web for a marine ecosystem.

### Partial Marine Food Web



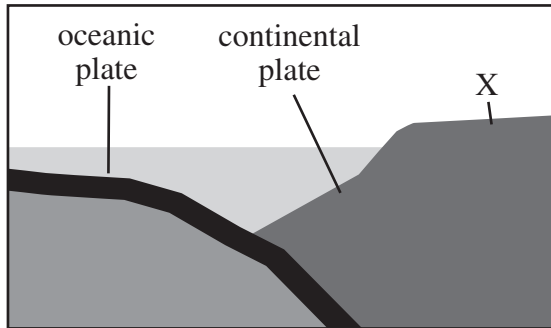
If the squid population was drastically reduced in this ecosystem, this change would have the greatest **negative** effect on which of these other species?

- A salmon
- B zooplankton
- C orca whale
- D elephant seal

Y09\_SC0521

**28**

The diagram below shows a boundary between an oceanic plate and a continental plate. An X marks one location on the continental plate.



Which feature will **most** likely form at the location marked by an X?

- A a desert
- B a volcano
- C a rift valley
- D a transform fault

Y09\_SC0624

**29**

The box below lists the approximate percentages of gases that compose Earth's atmosphere.

Nitrogen—78%
Oxygen—20.8%
Water vapor—1%
Argon—0.93%
Carbon dioxide—0.03%
Other—0.002%

All of the following would be appropriate ways to display the information in these statements **except**

- A a bar graph.
- B a pie chart.
- C a line graph.
- D a data table.

Y09\_SC0586

**30**

Which of these situations does **not** involve a transfer of energy?

- A A gas grill burns propane fuel.
- B The sun radiates light into space.
- C A large crate is pushed up a ramp.
- D A helium balloon on a string floats in place.

Y09\_SC0513

**31**

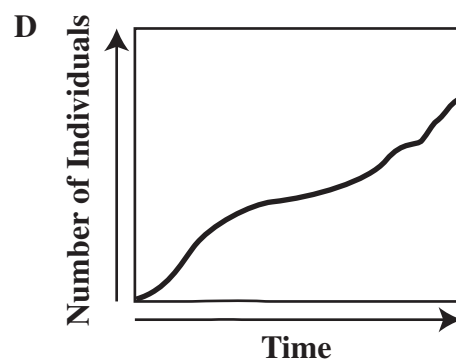
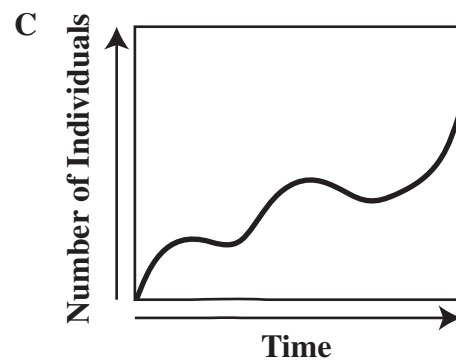
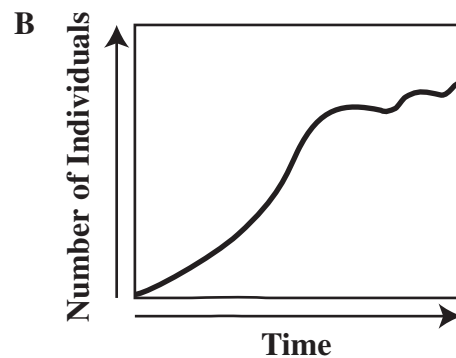
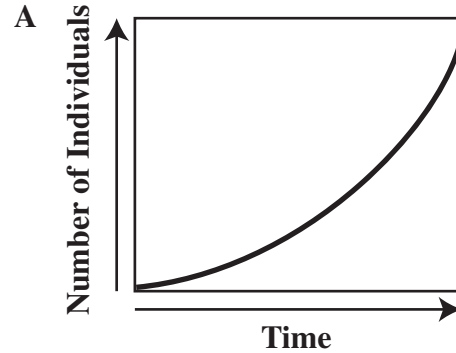
A planet in our solar system orbits the sun in approximately 225 Earth days. Which of these conclusions is **best** supported by this information?

- A The planet orbits closer to the sun than Earth does.
- B The planet's orbit is more circular than Earth's orbit.
- C The planet orbits the sun at a slower speed than Earth does.
- D The planet's orbit is more elliptical than Earth's orbit.

Y09\_SC0595

**32**

Which graph shows a population of organisms that is closest to reaching the carrying capacity of its environment?



**Go On** 

Y09\_SC0601

**33**

A student wants to test the effect of music on plant growth. He grows some plants in a bedroom window with music playing twenty-four hours per day. He grows a different variety of plants in his backyard with no music playing. What is the **main** problem with the design of this investigation?

- A There are too many variables.
- B There is no way to repeat the procedure.
- C There are too many ways to graph the data.
- D There is no way to accurately measure results.

Y09\_SC0542

**34**

Which of the following **best** describes the mass of the iron oxide that is produced during a chemical reaction when a fixed amount of iron combines completely with a fixed amount of oxygen?

- A equal to the mass of the iron plus the mass of the oxygen
- B greater than the combined mass of the iron and the oxygen
- C equal to the mass of the iron minus the mass of the oxygen
- D less than the mass of the iron but greater than the mass of the oxygen

Write your answer to Question 35 on a separate sheet of paper. Be sure to answer Parts A, B, and C.

Y09\_SC0644

**35**

In September, Alex observed a dry creek in a wildlife area in northwestern Nevada. In February of the next year, water started to flow in the creek, and a small pond formed in the area. By the end of May, the creek was dry again, and the pond was gone.

- A Identify **one** possible natural source of the water that flowed in the creek.
- B Describe the property of water that **most** likely changed when the pond disappeared.
- C Explain how some of the water that had been in the pond could return to the source you identified in **Part A**.



Y09\_SC0647

**36**

Which part of a plant cell contains the chromosomes?

- A vacuole
- B ribosome
- C nucleus
- D cytoplasm

Y09\_SC0522

**37**

Which of these astronomical objects is the largest?

- A a star
- B a planet
- C a spiral galaxy
- D a solar system

Y09\_SC0618

**38**

During an investigation, four plants were continuously exposed to various colors of light for a period of two weeks. The table below shows the increase in plant mass over the two-week period.

### Plant Growth Investigation

Plant	Light Color	Temperature (°C)	Increase in Plant Mass (g)
1	red	22	18
2	blue	22	25
3	green	22	10
4	white	22	30

Which statement **best** explains why all of the plants were grown at a temperature of 22°C?

- A The main purpose of this investigation was to see how well plants grow at 22°C.
- B Because temperature was not the experimental variable in this investigation, it was kept the same for each plant.
- C The best temperature for the growth of this type of plant during an investigation was 22°C.
- D Because temperature was an environmental factor in this investigation, it was determined by the plant environment.



Y09\_SC0592

**39** Which human body system **most** directly delivers nutrients to cells throughout the body?


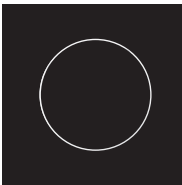


- A nervous system
- B muscular system
- C digestive system
- D circulatory system

Y09\_SC0515

**40** The picture below shows the appearance of the moon that a student observed on a clear night.



Which phase of the moon could the student observe three nights later?

- A 
- B 
- C 
- D 

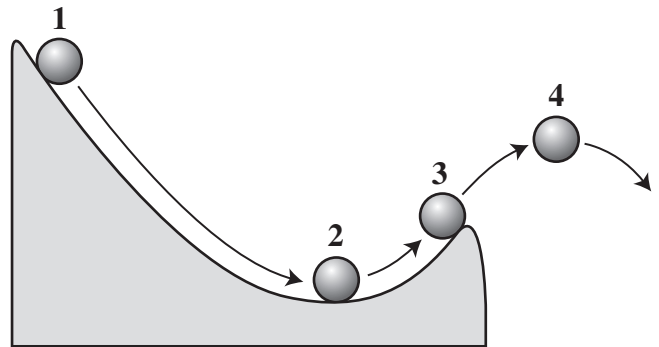
Y09\_SC0603

**41** Which two laboratory instruments would be **most** useful for determining the density of a liquid substance?

- A beaker and thermometer
- B hot plate and spring scale
- C hygrometer and metric ruler
- D graduated cylinder and balance

Y09\_SC0643

**42** The diagram below shows four positions of a ball rolling down and off a curved ramp.



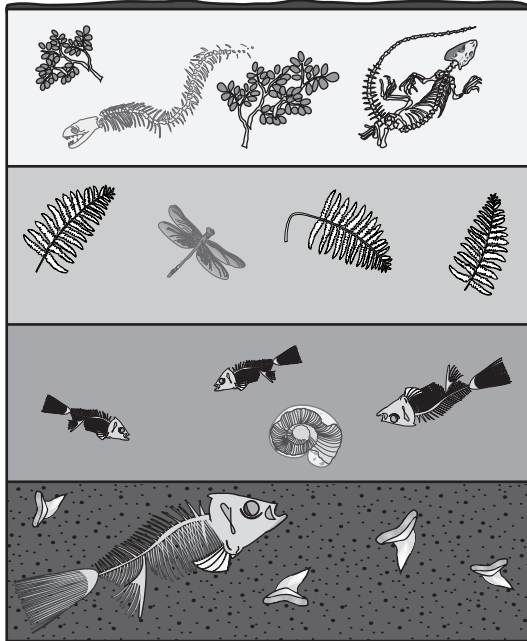
At which position is the kinetic energy of the ball being converted into potential energy?

- A position 1
- B position 2
- C position 3
- D position 4

Y09\_SC0537

**43**

The diagram below shows the undisturbed layers of rock found in an area and some of the fossils found in each layer.



Which describes how the environment in the area **most** likely changed over time?

- A from desert to lake
- B from river valley to forest
- C from ocean to desert
- D from grassland to coastal plain

Y09\_SC0518

**44**

A student observed a layer of rock that contained several fossils. Which of these processes were **most** directly involved in forming this layer of rock?

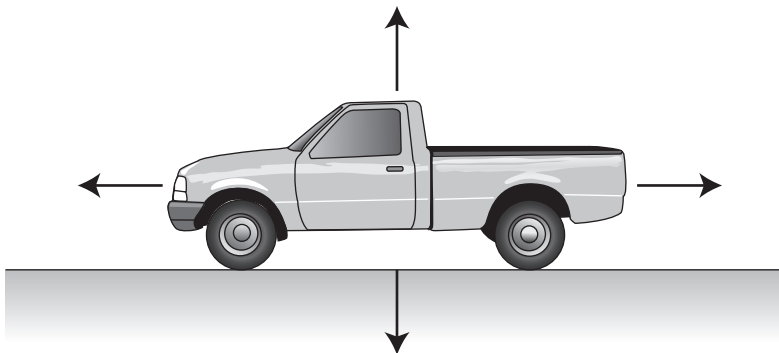
- A freezing and thawing
- B evaporation and condensation
- C erosion and runoff
- D sedimentation and compaction

Write your answer to Question 45 on a separate sheet of paper. Be sure to answer Parts A and B.

Y09\_SC0477

**45**

The diagram below shows a truck traveling on a straight and level road. Each arrow represents a force on the truck. The forces on the truck are balanced.



- A** Identify **two** forces on the truck that balance each other.
- B** Explain how you could show that the forces you identified in **Part A** are balanced.

Y09\_SC0621

**46**

A student collected the data below from his class.

### Class Birthdays

Season	Number of Boys' Birthdays	Number of Girls' Birthdays
Spring (Mar. 21–Jun. 20)	2	5
Summer (Jun. 21–Sept. 20)	3	3
Fall (Sept. 21–Dec. 20)	6	4
Winter (Dec. 21–Mar. 20)	4	3

He concluded that boys are more likely to be born in the fall and girls are more likely to be born in the spring. Which of these actions should he take to make his data more reliable?

- A He should get data from more students.
- B He should group the data by age instead of gender.
- C He should factor in where the students were born.
- D He should ask about the students' birth month instead of birth season.



Y09\_SC0536

**47**

The table below shows some of the characteristics of four groups of organisms.

**Characteristics of Four Groups of Organisms**

Group	Has Organ Systems	Has a Backbone	Is Warm Blooded	Produces Milk
1	No	No	No	No
2	Yes	No	No	No
3	Yes	Yes	No	No
4	Yes	Yes	Yes	Yes

Based on the characteristics shown, which group could include reptiles?

- A group 1
- B group 2
- C group 3
- D group 4

Y09\_SC0581

**48**

A solid metal ball with a mass of 10.0 kg is placed on a smooth floor. An impact force of 20.0 newtons is applied to the stationary ball. Which of these is closest to the acceleration of the ball immediately after the impact force is applied?

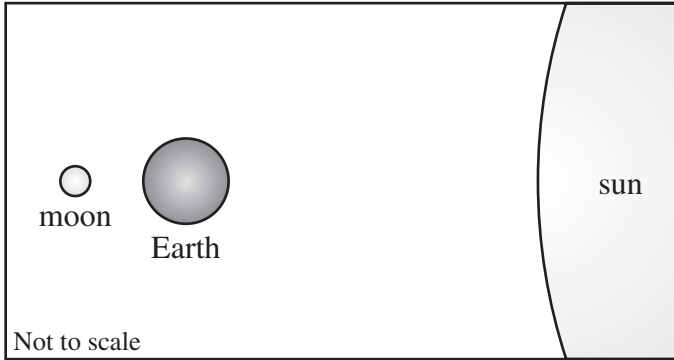
- A  $0.5 \text{ m/s}^2$
- B  $2.0 \text{ m/s}^2$
- C  $30.0 \text{ m/s}^2$
- D  $200.0 \text{ m/s}^2$



Y09\_SC0514

**49**

The diagram below shows the relative positions of Earth, the moon, and the sun.



Which phase of the moon can be observed from Earth when these bodies are positioned in this way?

- A full moon
- B new moon
- C first quarter
- D waxing gibbous

Y09\_SC0600

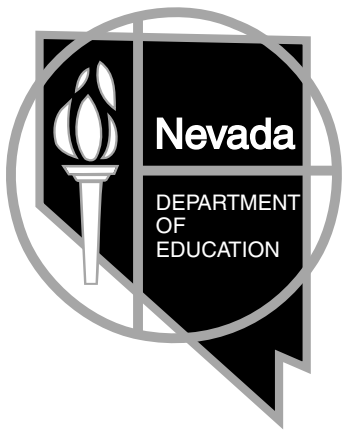
**50**

When investigating a new cancer-fighting drug, medical researchers give some of the subjects a pill that contains the drug. Some other subjects are given a pill that does not contain the drug. The drug-free pill serves what purpose in the design of this investigation?

- A a control
- B an experimental variable
- C a separate trial
- D a qualitative comparison



You may want to go back and check your answers or answer questions you did not complete.



GRADE

8

Nevada

# Appendix I

## Scoring Support Materials

Grade 8

SCIENCE

## Correct Answers for Multiple-choice Items

Item Number	Correct Answer	Content Cluster	DOK
1	A	C1	1
2	D	C3	1
3	B	C4	1
4	C	C1	1
5	D	C1	2
6	D	C2	2
7	B	C3	2
8	A	C4	2
9	D	C1	2
10	B	C4	2
11	D	C1	1
12	*	C1	3
13	D	C2	1
14	C	C1	2
15	D	C3	1
16	D	C4	1
17	B	C2	2
18	C	C3	2
19	D	C4	2
20	B	C1	2
21	D	C2	1
22	C	C3	1
23	D	C4	1
24	A	C1	1
25	A	C2	1

Item Number	Correct Answer	Content Cluster	DOK
26	C	C1	2
27	D	C2	2
28	B	C3	2
29	C	C4	2
30	D	C1	2
31	A	C3	2
32	B	C2	2
33	A	C4	2
34	A	C1	1
35	*	C3	3
36	C	C2	1
37	C	C3	1
38	B	C4	2
39	D	C2	1
40	C	C3	2
41	D	C4	2
42	C	C1	2
43	C	C2	2
44	D	C3	2
45	*	C1	3
46	A	C4	2
47	C	C2	2
48	B	C1	1
49	A	C3	1
50	A	C4	1

\*Indicates a written-response item. See the following pages for the rubrics and examples of responses.

**Detailed objectives for Content Standards and Depth of Knowledge (DOK) descriptions can be found on the Nevada Department of Education Website.**

## Question 12

Score	Description
3	Three key elements. AND Response addresses all parts of the question clearly and correctly. Response does not contain any incorrect information.
2	Two key elements. AND Response addresses all parts of the question. Response includes only minor errors.
1	One key element. Response does not address all parts of the question. OR Response addresses all parts of the question, but response includes major errors.
0	Response is incorrect.
Blank	No response.

### Part A

One key element

One key element for identifying one of the following elements that is involved in the reaction:

- Carbon
- Hydrogen
- Oxygen

### Part B

One key element

One key element for identifying one of the following compounds other than methane that is involved in the reaction:

- Carbon dioxide
- Water

### Part C

One key element

One key element for describing one of the following examples of evidence that can be used to determine whether a substance is an element:

- The substance is made of only one type of atom.
- The substance cannot be made by combining other elements in chemical reactions.
- The substance cannot be broken down into other elements in chemical reactions.

**(Continued on next page) →**

OR

One key element for describing one of the following examples of evidence that can be used to determine whether a substance is a compound:

- The substance is made of more than one type of atom.
- The substance can be made by combining elements in chemical reactions.
- The substance can be broken down into different elements in chemical reactions.

### Question 35

Score	Description
3	Three key elements. AND Response addresses all parts of the question clearly and correctly. Response does not contain any incorrect information.
2	Two key elements. AND Response addresses all parts of the question. Response includes only minor errors.
1	One key element. Response does not address all parts of the question. OR Response addresses all parts of the question, but response includes major errors.
0	Response is incorrect.
Blank	No response.

#### Part A

One key element

One key element for identifying one of the following possible natural sources of the water in the creek:

- Rain
- Snow
- Melting ice or snow
- Runoff from the surrounding area
- Ground water (seasonal spring)

#### Part B

One key element

One key element for describing one of the following properties of water that most likely changed when the pond disappeared:

- temperature
- volume
- density
- (average) speed of the particles
- forces between particles
- space between particles

**(Continued on next page) →|**

Part C

One key element

One key element for explaining that the water could evaporate back to the air, form new clouds, and fall again as rain or snow (which could melt, refreeze to form ice, runoff back into the stream, or move through the layers of soil and bedrock to return to the ground water source).

### Question 45

Score	Description
3	Three key elements. AND Response addresses all parts of the question clearly and correctly. Response does not contain any incorrect information.
2	Two key elements. AND Response addresses all parts of the question. Response includes only minor errors.
1	One key element. Response does not address all parts of the question. OR Response addresses all parts of the question, but response includes major errors.
0	Response is incorrect.
Blank	No response.

#### Part A

Two key elements

One key element for identifying either of the following pairs of balanced forces:

- the force from the engine (or thrust) pushing forward and friction (or drag) resisting forward motion
- gravity (or weight) pulling down and the ground (or the normal force) pushing up

#### Part B

One key element

One key element for describing either of the following as evidence that the forces identified in **Part A** are balanced:

If the truck is traveling at a constant speed (is not slowing down or speeding up), then the forward and backward forces are balanced.

OR

If the truck is traveling on a level road and does not move upward or downward, then the upward and downward forces are balanced.



GRADE

8

Nevada

## Appendix II

# Administrative Support Materials

Grade 8

SCIENCE

# ANSWER DOCUMENT

## SCIENCE

1.  A  B  C  D
2.  A  B  C  D
3.  A  B  C  D
4.  A  B  C  D
5.  A  B  C  D
6.  A  B  C  D
7.  A  B  C  D
8.  A  B  C  D
9.  A  B  C  D
10.  A  B  C  D

11.  A  B  C  D
12. Written Response
13.  A  B  C  D
14.  A  B  C  D
15.  A  B  C  D
16.  A  B  C  D
17.  A  B  C  D
18.  A  B  C  D
19.  A  B  C  D
20.  A  B  C  D

21.  A  B  C  D
22.  A  B  C  D
23.  A  B  C  D
24.  A  B  C  D
25.  A  B  C  D
26.  A  B  C  D
27.  A  B  C  D
28.  A  B  C  D
29.  A  B  C  D
30.  A  B  C  D

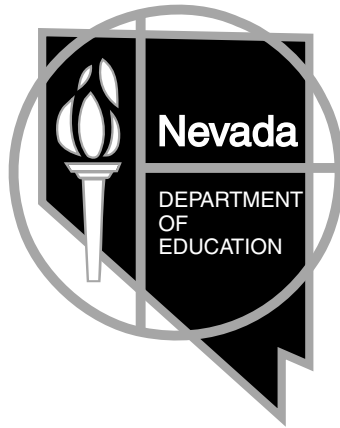
31.  A  B  C  D
32.  A  B  C  D
33.  A  B  C  D
34.  A  B  C  D
35. Written Response
36.  A  B  C  D
37.  A  B  C  D
38.  A  B  C  D
39.  A  B  C  D
40.  A  B  C  D

41.  A  B  C  D
42.  A  B  C  D
43.  A  B  C  D
44.  A  B  C  D
45. Written Response
46.  A  B  C  D
47.  A  B  C  D
48.  A  B  C  D
49.  A  B  C  D
50.  A  B  C  D









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