

Objective 4 Assignment From 9-28 Practice TAKS Test

1. Two steel plates can be joined by a process called arc welding. In this process, tiny droplets of molten metal are deposited on the joint between the plates. The droplets then cool and harden, joining the plates together. Many metals will react with oxygen when they are exposed to the high temperatures of arc welding. Therefore, the droplets of molten metal are often shielded from oxygen in the surrounding air by a layer of argon gas. Why would argon gas be a more suitable shield for arc welding than hydrogen gas?

- A Unlike hydrogen, argon is a nonmetal.
- B Unlike hydrogen, argon is an inert gas.
- C Argon has a larger atomic radius than hydrogen does.
- D Argon has a greater atomic mass than hydrogen does.

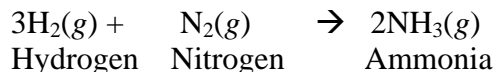
_____ Explain your answer:

2. Which best explains why sodium is more reactive than magnesium?

- A Sodium has only one valence electron, while magnesium has two.
- B Sodium atoms typically have one more neutron than magnesium atoms do.
- C Sodium forms ions with a charge of 2+, but magnesium forms ions with a charge of 1+.
- D Sodium atoms tend to attract the electrons of other atoms more than magnesium atoms do.

_____ Explain your answer:

3. Hydrogen and nitrogen gas react in a sealed container kept at a constant temperature. The pressure in the container is less at the end of the reaction than at the beginning.



Which is the most likely reason that the pressure in the container decreased?

- A There are fewer atoms at the end of the reaction than at the beginning.
- B There are fewer molecules at the end of the reaction than at the beginning.
- C The mass of the reactants is less than the mass of the products in the reaction.
- D The volume of the reactants is less than the volume of the products in the reaction.

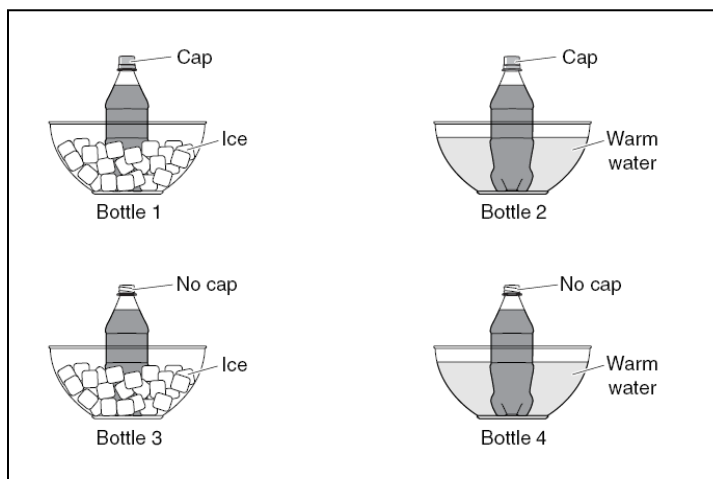
_____ Explain your answer:

4. What is one way to distinguish a solution of salt (NaCl) and water from a solution of sugar (C₆H₁₂O₆) and water without tasting them?

- A The salt can be recovered by evaporating the water, but the sugar cannot.
- B The salt solution will conduct electric current, but the sugar solution will not.
- C The sugar can be separated from the water by filtration, but the salt cannot.
- D A beam of light passing through the sugar solution will be visible, but a beam of light passing through the salt solution will not.

_____ Explain your answer:

5.



If each of these bottles of carbonated water initially contained the same amount of dissolved carbon dioxide, which bottle will contain the least amount of dissolved carbon dioxide after 15 minutes?

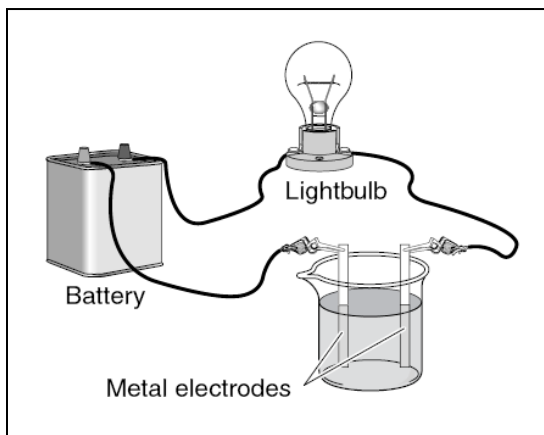
- A Bottle 1
- B Bottle 2
- C Bottle 3
- D Bottle 4

_____ Explain your answer:

6. Scuba divers are exposed to greater pressure the deeper they dive. Which is most likely to occur as a result of this increased pressure?

- A Glucose will become much more soluble in divers' cells.
- B A high level of nitrogen gas will dissolve in divers' bloodstream.
- C Small bubbles of carbon dioxide will form in divers' bloodstream.
- D The amount of oxygen dissolved in divers' cells will sharply decrease.

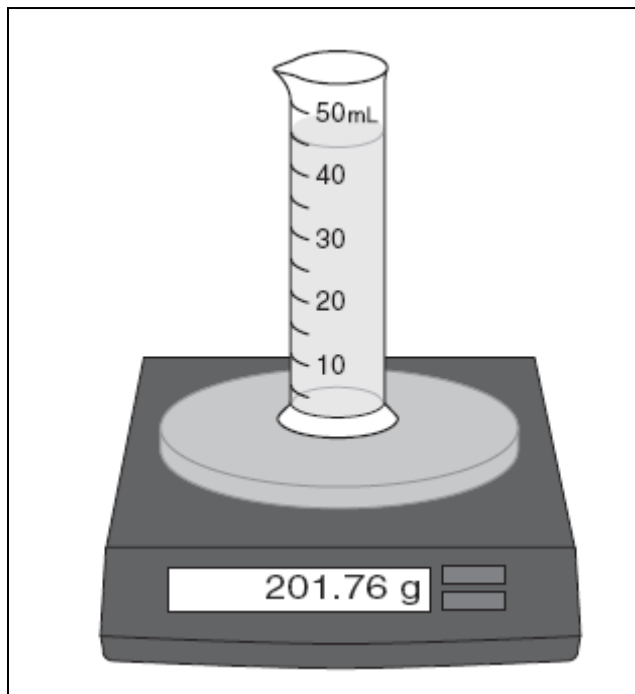
_____ Explain your answer:



7. When added to the beaker, which liquid would cause the lightbulb to glow the brightest?
- A A concentrated solution of water and table sugar
 - B A concentrated solution of water and nitrogen gas
 - C A dilute solution of water and ammonia
 - D A dilute solution of water and sulfuric acid

_____ Explain your answer:

8. A student measures the mass of an empty graduated cylinder as 87.76 grams. The student then pours a liquid into the cylinder and places it on the scale. According to the student's measurements, what is the density of the liquid in grams per milliliter? Record and bubble in your answer.



				.			
0	0	0	0		0	0	0
1	1	1	1		1	1	1
2	2	2	2		2	2	2
3	3	3	3		3	3	3
4	4	4	4		4	4	4
5	5	5	5		5	5	5
6	6	6	6		6	6	6
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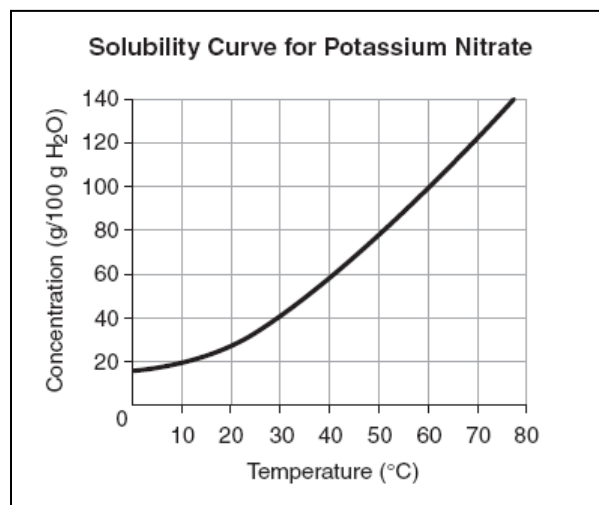
Show your work in the space below:

9. Why is a ship with a hollow steel hull able to float in seawater?
- A** The density of steel is greater than the density of seawater.
 - B** The buoyant force on the ship is less than the weight of the ship.
 - C** The ship displaces a volume of seawater that weighs more than the ship.
 - D** The buoyant force on the ship is less than the weight of the seawater displaced by the ship.

_____ Explain your answer:

10. Baking soda consists of the compound sodium bicarbonate (NaHCO_3). When baking soda is heated, sodium carbonate (Na_2CO_3) is produced. Two hundred grams (200 g) of sodium bicarbonate is placed in a test tube and heated with a Bunsen burner. After the reaction is complete, the only substance remaining in the test tube is 126 grams of sodium carbonate. Which best explains why this reaction does not violate the law of conservation of mass?
- A** Sodium bicarbonate has a greater molecular mass than sodium carbonate.
 - B** The reaction has one or more products that leave the test tube in the form of a gas.
 - C** The high heat of the Bunsen burner destroys some of the atoms in the sodium bicarbonate.
 - D** In the balanced chemical equation, the mass of the reactants is greater than the mass of the products.

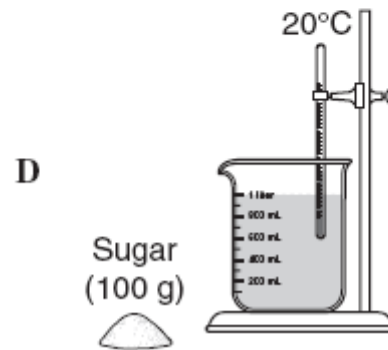
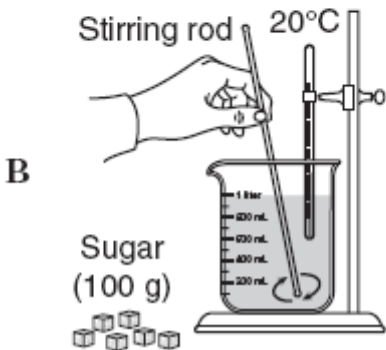
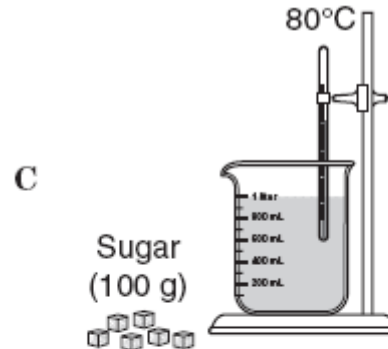
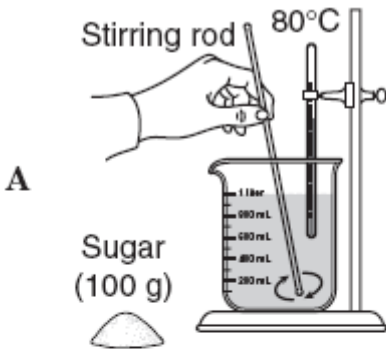
_____ Explain your answer:



11. A teacher has prepared a saturated solution of potassium nitrate (KNO_3) in 100 grams of water heated to 60°C . About how many grams of potassium nitrate will have settled out of the solution once it reaches a room temperature of 25°C ?
- A** 30 g
 - B** 65 g
 - C** 95 g
 - D** 145 g

_____ Explain your answer:

12. Each beaker shown below contains one liter of water. One hundred grams of sugar is added to each beaker. In which beaker will the sugar dissolve the fastest?



_____ Explain your answer:

13. Thermal pollution occurs when human activities cause the temperature of lakes or rivers to rise. Why are fish most likely to be harmed by long-term thermal pollution of the lake in which they live?

- A** The solubility of oxygen in the lake will decrease.
- B** The solubility of carbon dioxide in the lake will increase.
- C** The solubility of potassium fertilizers, such as KCl, will decrease in the lake.
- D** The solubility of quartz crystals (SiO_2) will increase in the lake.

_____ Explain your answer:

14. The unbalanced chemical equation shows the reaction that occurs when a piece of aluminum foil is placed in a solution of water and copper sulfate.



Which set of coefficients balances the chemical equation?

A 1, 3, 1, 3

B 2, 1, 1, 1

C 2, 3, 1, 1

D 2, 3, 1, 3

_____ Explain your answer:

15. Which of the following is an example of a chemical change?

F Ice cracking

G Sugar dissolving

H Milk souring

J Lead melting

_____ Explain your answer:
