

Passport to Science Exploration: The Core of Chemistry

Sample Questions

- (1) Kenzi conducts an experiment to determine whether sugar dissolves faster in warm water or cold water. What is the dependent variable in his experiment?
- A. The temperature of the water
 - B. The amount of water in the cups
 - C. The rate at which the sugar dissolves
 - D. The brand of sugar used
- (2) Which change in temperature is equivalent to a 10 °C increase?
- A. A 10 °F increase
 - B. A 12 °F increase
 - C. An 18 °F increase
 - D. A 50 °F increase
- (3) Which statement is true of elements in the same row of the periodic table?
- A. They do not react with one another
 - B. They have the same number of electron shells
 - C. They have the same number of electrons in their outer shell
 - D. They tend to participate in the same types of reactions
- (4) In which situation does a 2 kg ball have the greatest potential energy?
- A. At the start of a fall from a height of 2 m
 - B. Halfway to the ground after falling from a height of 2 m
 - C. Halfway to the ground after falling from a height of 4 m
 - D. Both A and C have the greatest potential energy
- (5) Which process is an example of condensation?
- A. Water vapor changing to ice
 - B. Dry ice changing to gaseous carbon dioxide
 - C. Hydrochloric acid changing to hydrogen chloride gas
 - D. Nitrogen gas changing to liquid nitrogen

(6) Which statement is true of liquids?

- A. They have a defined shape
- B. They have a defined volume
- C. Both A and B
- D. None of the above

(7) What is the subatomic particle makeup of an ion with a charge of 2+?

- A. 5 protons, 5 neutrons, 3 electrons
- B. 3 protons, 3 neutrons, 5 electrons
- C. 5 protons, 3 neutrons, 5 electrons
- D. 3 protons, 5 neutrons, 3 electrons

(8) Denise buys a bottle of milk and a bottle of honey as described in the table below. Which statement is true of the mass of the milk that Denise bought?

Drink	Density	Carton volume
Milk	1.0 kg/L	2.0 L
Honey	1.4 kg/L	1.0 L

- A. It is two times the mass of the honey that she bought
- B. It is 0.6 kg more than the mass of the honey that she bought
- C. It is half the mass of the honey that she bought
- D. It is 0.4 kg less than the mass of the honey that she bought

(9) What occurs when water is heated?

- A. It dissociates into oxygen and hydrogen
- B. Its molecules become more attracted to one another
- C. Its molecules form a crystalline structure
- D. Its molecules move at a faster rate

(10) Chlorophyll is the chemical compound that gives leaves their green color. One reason leaves turn from green to brown in autumn is that as temperatures decrease, plants produce less chlorophyll. Which process causes leaves to appear green?

- A. A chemical reaction
- B. Deposition
- C. A phase change
- D. The Tyndall effect

Answer Key

See how you did! Check out the answers below.

- (1) C
- (2) C
- (3) B
- (4) D
- (5) D
- (6) B
- (7) A
- (8) B
- (9) D
- (10) A

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