

1) Chemical fertilizers stimulate plant growth; but if the concentration is too high, they may damage roots. What precautions concerning chemical fertilizers must a gardener take?

- Use them only on some of his or her plants
- Use only the amount recommended.
- Do not apply chemical fertilizers.
- Apply as much as possible without damaging roots.
- Give the plants only tiny amounts.

Answer :: B

Explanation of Answer:

The only way the gardener can know how much to use is to follow the instructions given.

2) Amniote vertebrates are generally classified into three orders: Reptilia, Aves (birds), and Mammalia. Of the following, which group of three animals contains one member of each order?

- ostrich, American robin, Norway rat
- Beluga whale, black-footed ferret, box turtle
- timber rattlesnake, fence lizard, leopard
- African lion, sea otter, herring gull
- house sparrow, garter snake, African elephant

Answer :: E

Explanation of Answer:

Reptilia: garter snake

Aves: house sparrow:

Mammalia: African elephant.

3) As temperature rises, solids generally become more soluble in water, but gases become less soluble. If a soft drink contains high concentrations of sugar and carbon dioxide, which of the following may be expected to happen if it is cooled down?

- A. Sugar may precipitate out.
- B. Gas bubbles may form and produce foam.
- C. Water may evaporate rapidly.

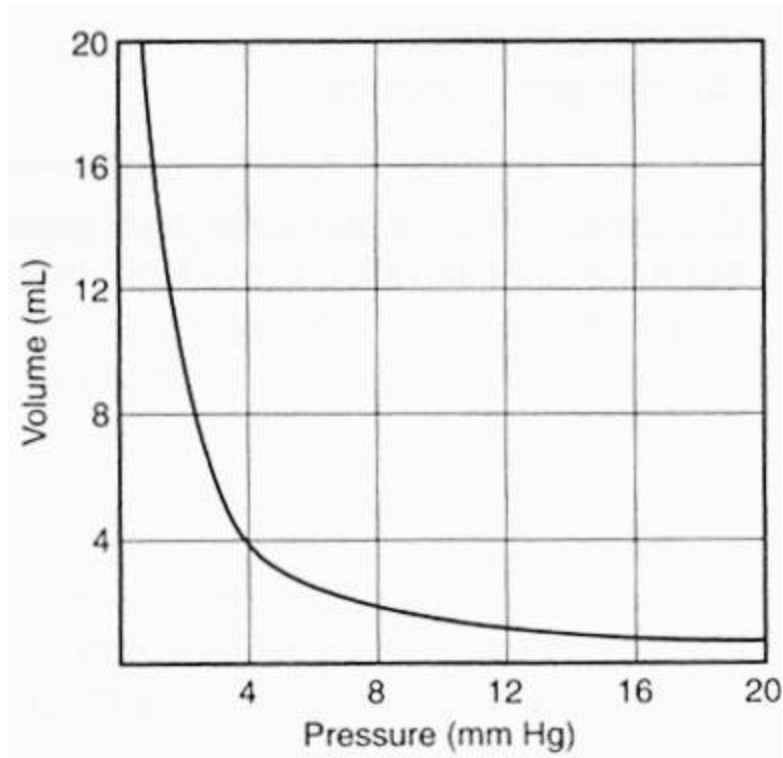
- A only
- B only
- A and B only
- B and C only
- A and C only

Answer :: A

Explanation of Answer:

The sugar becomes less soluble, and may come out of solution as a solid. The gas becomes more soluble and will remain in solution. If anything, the water will evaporate more slowly at lower temperatures.

4)



This graph represents the relationship of the pressure and volume of a given mass of a gas at constant temperature. When the pressure equals 8 millimeters of mercury (mmHg), what is the volume, in milliliters (mL)?

- 1
- 2
- 4
- 8
- 16

Answer :: B

Explanation of Answer:

Locate the given pressure, 8 mm, along the horizontal axis. Move up the 8 mm line until the graph curve is reached. On the vertical axis at the left, you will find that the volume at this point is approximately 2 mL.

5) Ions are electrically charged particles that are formed when certain compounds are dissolved in water. These solutions will conduct electricity.

The Swedish scientist Svante Arrhenius coined the term ion (which means wanderer) to explain why solutions of electrolytes will conduct an electric current. When an electrolyte forms into a solution, it dissolves or dissociates into ions, a process called ionization. If a substance does not ionize, it will not conduct an electric current.

Electrolytes include most acids, bases, and salts. Some conductors include hydrogen and sodium chloride, copper sulfate, and potassium nitrate. Substances that are not electrolytes include distilled water, sugar water, and most organic compounds.

Which of the following is a nonelectrolyte?

- HNO_3 (nitric acid)
- HCl (hydrochloric acid)
- H_2SO_4 (sulfuric acid)
- C_3H_8 (propane gas)
- NaCl (table salt)

Answer :: D

Explanation of Answer:

Propane (C_3H_8) is an organic compound. HNO_3 , H_2SO_4 and HCl are acids. NaCl is a salt.

6

Which of the following compounds in the liquid phase can be considered an electrolyte?

- H_2O (distilled water)
- CO_2 (carbon dioxide)
- NaCl (sodium chloride)
- CuO (oxidized)

copper)

- H₂O₂ (hydrogen peroxide)

Answer :: C

Explanation of Answer:

The only solution among the answers that is specifically identified in the passage as an electrolyte is sodium chloride.

7) An object accelerates (changes its speed) only if the forces acting on it in one direction are greater than the forces in the opposite direction, All of the following objects will accelerate EXCEPT

- a gas balloon in which the buoyant force is greater than its weight and air resistance
- a man in a parachute when the air resistance is less than his weight
- an airplane in horizontal flight when the thrust of the engine is equal to the drag of the air
- a ball striking a wall, in which the force of the ball on the wall is equal to the force of the wall on the ball
- a rocket fired straight up, when the engine thrust is equal to the air resistance

Answer :: C

Explanation of Answer:

In horizontal flight, the engine thrust pushes the plane forward and air drag holds it back: If they are equal. there will be no change in speed.

8) Humidity is the amount of water vapor in the air at a given time. At warm temperatures, air can hold more moisture than it can at cold temperatures. Relative humidity is the amount of vapor the air is holding expressed as a percentage of the amount the air is capable of holding. For example, at 86

degrees Fahrenheit, air can hold a maximum of 30.4 grams of water per cubic meter. If the air at the same temperature is holding only 15.2 grams of water, the relative humidity is 50 percent. At the point at which the air becomes saturated (exceeds the level of water vapor it can hold), it releases water vapor in the form of dew or condensation.

If the air at 75 degrees is holding the maximum amount of moisture that it can, and the temperature suddenly drops to 60 degrees, what is likely to be the result?

- The humidity will remain unchanged.
- The relative humidity will decrease.
- Precipitation will be released in the form of rain.
- Precipitation will be released in the form of hail.
- Precipitation will be released in the form of snow.

Answer :: C

Explanation of Answer:

According to the passage, warm air holds more moisture than cold air; therefore, when the temperature drops, the cold air cannot hold the amount of moisture that the warmer air held. At that temperature, the saturation point would be exceeded and the excess humidity would be released as rain.

9

During subfreezing days in many parts of the country, the indoor relative humidity decreases when homes are heated. Furniture and skin dry out, and static electricity increases. For health reasons, doctors recommend the use of humidifiers. Which of the following best explains the lack of humidity in the air indoors?

- The amount of water vapor in the air goes down.

- The water vapor in the air evaporates.
- The humidity in winter is lower.
- The cold temperatures prevent humidity.
- Dry air can only occur in warm air.

Answer :: C

Explanation of Answer:

At a given time, water vapor in the air is constant. Cold air can hold less than warm air; and when air is heated, it has a greater capacity to hold moisture. If that moisture is not added to the air, the humidity level goes down.

10) The Smiths have four children, all girls. Their fifth child is a boy. Why did this change occur?

- the conception classes taken by the parents.
- the timing of the fertility cycles.
- the mother's contribution of a Y chromosome.
- the father's contribution of a Y chromosome.
- the "law of averages" finally catching up.

Answer :: D

Explanation of Answer:

The Y chromosome that determines a child's gender is carried by the father.