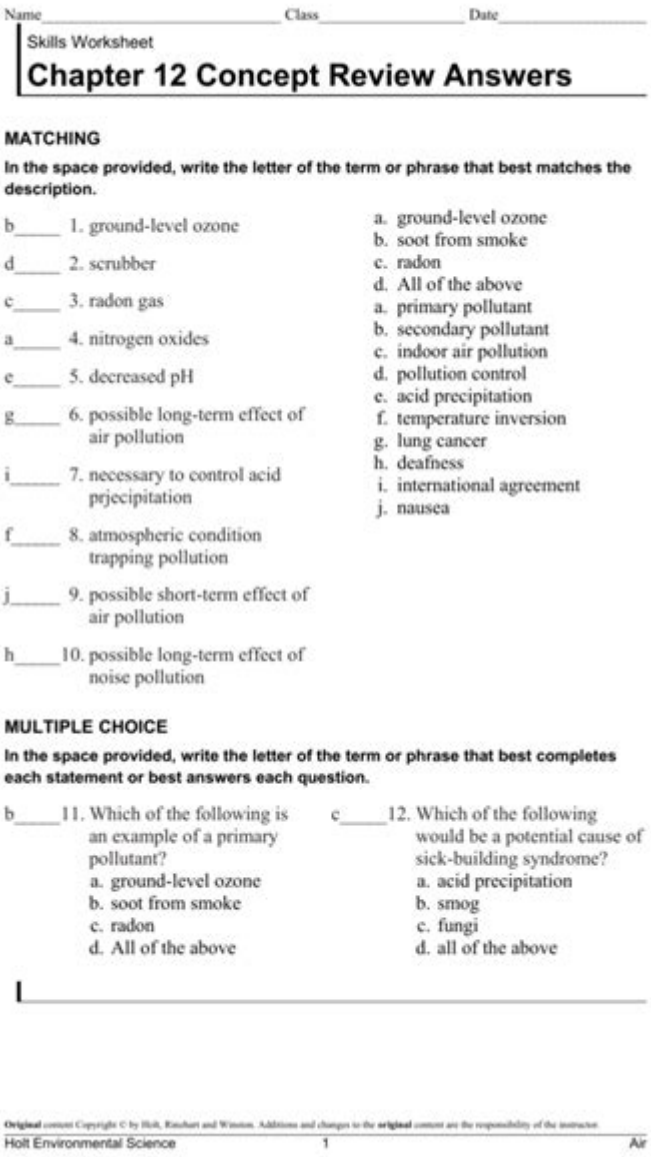
Holt Chemistry Concept Review Answers Chapter 12



Name_____ Class_____ Date_____

Skills Worksheet

Chapter 12 Concept Review Answers

MATCHING

In the space provided, write the letter of the term or phrase that best matches the description.

b_____ 1. ground-level ozone
d_____ 2. scrubber
c_____ 3. radon gas
a_____ 4. nitrogen oxides
e_____ 5. decreased pH
g_____ 6. possible long-term effect of air pollution
i_____ 7. necessary to control acid prjecipitation
f_____ 8. atmospheric condition trapping pollution
j_____ 9. possible short-term effect of air pollution
h_____10. possible long-term effect of noise pollution

a. ground-level ozone
b. soot from smoke
c. radon
d. All of the above
a. primary pollutant
b. secondary pollutant
c. indoor air pollution
d. pollution control
e. acid precipitation
f. temperature inversion
g. lung cancer
h. deafness
i. international agreement
j. nausea

MULTIPLE CHOICE

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

b_____11. Which of the following is an example of a primary pollutant?
a. ground-level ozone
b. soot from smoke
c. radon
d. All of the above

c_____12. Which of the following would be a potential cause of sick-building syndrome?
a. acid precipitation
b. smog
c. fungi
d. all of the above

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Holt Environmental Science 1 Air

Holt Chemistry Concept Review Answers Chapter 12

Holt Chemistry, a widely used textbook in high school chemistry courses, provides a comprehensive overview of various chemical concepts, including the significant topics covered in Chapter 12. Chapter 12 is primarily focused on the study of solutions, solubility, and the various factors that affect the behavior of solutions. This article will delve into the key concepts and answers from the concept review section of this chapter, ensuring a clear understanding for students and educators alike.

Understanding Solutions

A solution is a homogeneous mixture composed of two or more substances. Solutions can be classified based on their components:

- Solvent: The substance in which the solute dissolves. It is usually present in the largest amount.
- Solute: The substance that is dissolved in the solvent. It can be present in smaller quantities and can be a solid, liquid, or gas.

Types of Solutions

Solutions can be classified into various types based on their physical state and the nature of solute and solvent:

1. Solid Solutions: All components are in solid form (e.g., alloys like bronze).
2. Liquid Solutions: The solvent is a liquid (e.g., saltwater).
3. Gaseous Solutions: The solvent is a gas (e.g., air).

Properties of Solutions

Solutions possess unique properties that differentiate them from their individual components:

- Homogeneity: Solutions are uniform in composition and appearance.
- Particle Size: The solute particles are so small that they cannot be seen, and they do not settle out over time.
- Conductivity: Some solutions can conduct electricity (electrolytes), depending on the presence of ions.

Concentration of Solutions

The concentration of a solution is a measure of how much solute is present in a given quantity of solvent or solution. Common ways to express concentration include:

- Molarity (M): Moles of solute per liter of solution.
- Molality (m): Moles of solute per kilogram of solvent.
- Percent by mass: Mass of solute divided by the total mass of the solution, multiplied by 100.
- Percent by volume: Volume of solute divided by the total volume of the solution, multiplied by 100.

Factors Affecting Solubility

Several factors influence the solubility of a solute in a solvent:

1. Temperature: Generally, solubility increases with temperature for solid solutes but may decrease for gases.
2. Pressure: Affects the solubility of gases; increasing pressure increases gas solubility in liquids.
3. Nature of the Solute and Solvent: The "like dissolves like" principle indicates that polar solutes dissolve in polar solvents, while nonpolar solutes dissolve in nonpolar solvents.

Preparing Solutions

When preparing solutions, it's essential to follow specific procedures to ensure accuracy:

- Dilution: To prepare a dilute solution from a concentrated solution, use the formula:

$$ C_1V_1 = C_2V_2 $$

Where:
- C_1 = concentration of the stock solution
- V_1 = volume of the stock solution
- C_2 = concentration of the diluted solution
- V_2 = volume of the diluted solution

- Mixing: Always add solute to solvent, not the other way around, to avoid excessive heat generation or splattering.

Colligative Properties

Colligative properties are properties of solutions that depend on the number of solute particles in a given amount of solvent, rather than the identity of the solute. The main colligative properties include:

1. Vapor Pressure Lowering: The presence of a solute lowers the vapor pressure of the solvent.
2. Boiling Point Elevation: Solutions have a higher boiling point than the pure solvent.
3. Freezing Point Depression: The freezing point of a solution is lower than that of the pure solvent.
4. Osmotic Pressure: The pressure required to prevent the flow of solvent into the solution through a semipermeable membrane.

Calculating Colligative Properties

Colligative properties can be calculated using specific formulas:

- Boiling Point Elevation:

$$ \Delta T_b = i \cdot K_b \cdot m $$

- Freezing Point Depression:

$$ \Delta T_f = i \cdot K_f \cdot m $$

Where:
- $ \Delta T_b $ and $ \Delta T_f $ are the changes in boiling and freezing points, respectively.
- $ i $ is the van 't Hoff factor (number of particles the solute breaks into).
- $ K_b $ and $ K_f $ are the boiling and freezing point constants for the solvent.
- $ m $ is the molality of the solution.

Conclusion

The Holt Chemistry Concept Review Answers for Chapter 12 provide a comprehensive understanding of solutions, their properties, and the factors that affect solubility. Students must grasp the concepts of concentration, colligative properties, and the preparation of solutions to excel in chemistry. Mastering these topics not only aids in academic success but also lays the groundwork for more advanced studies in chemistry and related fields. Through diligent study and practice, learners can develop a solid foundation in solution chemistry, preparing them for future scientific endeavors.

Frequently Asked Questions

What are the main topics covered in Chapter 12 of Holt Chemistry?

Chapter 12 of Holt Chemistry primarily covers the concepts of gases, including the gas laws, the behavior of gases, and the ideal gas law.

How do you apply the ideal gas law to solve problems?

To apply the ideal gas law (PV = nRT), you need to know the values for

pressure (P), volume (V), number of moles (n), the ideal gas constant (R), and temperature (T). Rearranging the equation allows you to solve for any one of these variables.

What is the significance of the gas laws presented in Chapter 12?

The gas laws are significant because they describe the relationships between pressure, volume, temperature, and amount of gas, which are crucial for understanding gas behavior in various scientific and practical applications.

Can you explain Boyle's Law as discussed in Chapter 12?

Boyle's Law states that the pressure of a gas is inversely proportional to its volume when the temperature and amount of gas remain constant. This means that as volume increases, pressure decreases, and vice versa.

What are some common misconceptions about gases that are clarified in Chapter 12?

Common misconceptions include the belief that gases do not have mass or that they occupy no space. Chapter 12 clarifies that gases have mass, occupy space, and their behavior can be predicted using gas laws.

Holt Chemistry Concept Review Answers Chapter 12

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It is the sequel to the 1979 science fiction horror film Alien, and the second film in the Alien franchise. Set in the far future, it stars Sigourney Weaver as Ellen Ripley, the sole survivor of ...

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Jul 18, 1986 · Aliens: Directed by James Cameron. With Sigourney Weaver, Carrie Henn, Michael Biehn, Paul Reiser. Decades after surviving the Nostromo incident, Ellen Ripley is sent out to ...

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Aliens | Alien Wiki | Fandom
Aliens is a 1986 science fiction action film directed by James Cameron and starring Sigourney

Weaver, Carrie Henn, Michael Biehn, Lance Henriksen, William Hope, and Bill Paxton.

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Aliens (film) | Xenopedia | Fandom
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Aliens | 20th Century Studios
Fifty-seven years after surviving an apocalyptic attack aboard her space vessel by merciless space creatures, Officer Ripley (Sigourney Weaver) awakens from hyper-sleep and tries to …

Aliens (1986) - | Synopsis, Movie Info, Moods, Themes and …
Aliens is a 1986 science fiction action film written and directed by James Cameron. It is the sequel to the 1979 science fiction horror film Alien, and the second film in the Alien franchise.

Aliens movie review & film summary (1986) | Roger Ebert
After all, she's only the one person who has seen an alien, so what does she know? And then the movie escalates into a nonstop war between human and alien. It's here that my nerves started …

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