

SECTION 12 4 PERCENT YIELD ANSWER KEY CHEMISTRY MATTER AND CHANGE CHAPTER STU

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Section 12.4 Percent Yield Answer Key

Chemistry: Matter and Change Chapter Study Guide for Content Mastery

Question 1:

What is a theoretical yield?

Answer:

The theoretical yield is the maximum amount of product that can be obtained from a given amount of reactants, assuming a complete reaction.

Question 2:

Calculate the theoretical yield of carbon dioxide (CO₂) when 2.0 moles of propane (C₃H₈) react completely with 6.0 moles of oxygen (O₂).

Answer:

The balanced equation is: $\text{C}_3\text{H}_8 + 5\text{O}_2 \rightarrow 3\text{CO}_2 + 4\text{H}_2\text{O}$

Moles of CO₂ = 3 x moles of C₃H₈ = 3 x 2.0 = 6.0 moles

Theoretical yield of CO₂ = 6.0 moles x 44.0 g/mol = 264 g

Question 3:

A reaction between 50.0 g of sodium chloride (NaCl) and 25.0 g of silver nitrate (AgNO₃) produces 72.0 g of silver chloride (AgCl). Calculate the percent yield of AgCl.

Answer:

Balanced equation: $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{NaNO}_3$

Moles of AgCl = $72.0 \text{ g} / 143.3 \text{ g/mol} = 0.502 \text{ moles}$

Theoretical yield of AgCl = $0.502 \text{ moles} \times 143.3 \text{ g/mol} = 72.0 \text{ g}$

Percent yield = $(\text{Actual yield} / \text{Theoretical yield}) \times 100\% = (72.0 \text{ g} / 72.0 \text{ g}) \times 100\% = \mathbf{100\%}$

Question 4:

What are two possible reasons why a percent yield may be less than 100%?

Answer:

1. Side reactions may occur, consuming reactants and producing unwanted products.
2. Incomplete reaction, where not all of the reactants are consumed.

Question 5:

Calculate the mass of magnesium oxide (MgO) that should be produced from the reaction of 10.0 g of magnesium (Mg) with excess oxygen (O₂).

Answer:

Balanced equation: $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$

Moles of Mg = $10.0 \text{ g} / 24.3 \text{ g/mol} = 0.412 \text{ moles}$

Moles of MgO = $2 \times \text{moles of Mg} = 2 \times 0.412 = 0.824 \text{ moles}$

Mass of MgO = $0.824 \text{ moles} \times 40.3 \text{ g/mol} = \mathbf{33.3 \text{ g}}$

What is Processing? Processing is a free and open-source programming language and environment designed specifically for visual artists, designers, and educators. It allows users to create interactive art, animations, and simulations without extensive programming knowledge.

Why use Processing for Interactive Art? Processing provides several advantages for creating interactive art:

- **Simplicity:** Processing uses a simplified syntax that makes it easy to learn and use.
- **Interactivity:** Processing allows artists to create programs that respond to user input, such as mouse movements or keyboard presses.
- **Community:** Processing has a large and active community, providing support and inspiration for artists.

What can you do with Processing? With Processing, you can create a wide range of interactive art projects, including:

- **Abstract animations:** Generate complex, dynamic animations with lines, shapes, and colors.
- **Interactive games:** Develop simple games that respond to player input.
- **Data visualizations:** Create data visualizations that transform data into engaging visual displays.

How do I get started with Processing? To get started with Processing, follow these steps:

1. Visit the Processing website (processing.org) and download the latest version.
2. Install Processing and open it on your computer.
3. Create a new sketch and start coding! Processing provides numerous tutorials and examples to help you along the way.

Explorers 5: Test Photocopiable (Oxford University Press)

Paragraph 1: Comprehension Question

Question: Read the text and answer the question: Who is the main character in the story?

Paragraph 2: Answer

Answer: The main character in the story is Max.

Paragraph 3: Comprehension Question

Question: What does Max find in the attic?

Paragraph 4: Answer

Answer: Max finds an old chest in the attic.

Paragraph 5: Comprehension Question

Question: What does Max do with the chest?

Paragraph 6: Answer

Answer: Max unlocks the chest and discovers a map inside.

The Truth About Death: Unveiling the Enigma

Death, an inevitable aspect of life, has long perplexed humanity. Questions about its nature, its consequences, and its meaning have been pondered for centuries. Here, we delve into the truth about death, separating fact from myth:

1. What Happens When We Die?

Scientifically, death occurs when the brain ceases all activity. After death, the body begins to decompose as cells break down. However, the exact moment of transition from life to death remains elusive. From a spiritual or metaphysical perspective, many believe that consciousness continues in a non-physical form.

2. Is There an Afterlife?

The existence of an afterlife is a matter of faith and belief. There is no scientific evidence to prove or disprove its existence. However, numerous cultures and

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religions have developed intricate theories about what happens after death, ranging from reincarnation to eternal paradise or punishment.

3. What is the Meaning of Death?

The meaning of death is deeply personal and can vary greatly depending on one's beliefs, culture, and experiences. Some view death as a natural end to life, while others see it as a transition to a different realm. Ultimately, the meaning we ascribe to death can shape our attitudes towards life and mortality.

4. How Can We Prepare for Death?

Preparing for death involves both practical and emotional aspects. Legally, having a will and end-of-life directives can ensure our wishes are respected. Emotionally, we can cultivate acceptance of the inevitability of death, resolve unfinished business, and express our love to those who matter most.

5. Is Death a Taboo Subject?

In many societies, death remains a taboo subject, rarely discussed openly. This avoidance can lead to misunderstandings, fear, and isolation. By talking about death, we can break down stigmas, provide comfort to the dying and bereaved, and foster a deeper understanding of our own mortality.

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