

## Stoichiometry Practice Items

1. How many moles of  $C_2H_6$  are present in 600 mg?

- A. .002 moles
- B. .02 moles
- C. 10 moles
- D. 20 moles

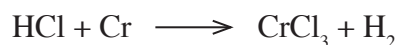
2. How many grams of acetylene combine with 500 g  $Br_2$  in a reaction to completion to form  $C_2H_2Br_4$ ?

- A. 10 g
- B. 41 g
- C. 81 g
- D. 250 g

3. Germanium is an element used in semiconductors. How many atoms of germanium are there in 35.5g of germanium?

- A.  $8.0 \times 10^{18}$
- B.  $1.6 \times 10^{19}$
- C.  $2.9 \times 10^{23}$
- D.  $1.2 \times 10^{24}$

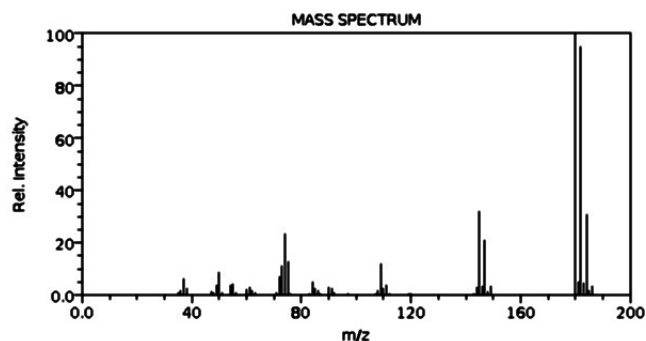
4. Which is the sum of the coefficients in the following equation when balanced?



- A. 6
- B. 9
- C. 13
- D. 14

5. A compound with empirical formula  $C_2ClH$  was analyzed by mass spectrometry. What is the molecular formula of the compound?

- A.  $C_2ClH$
- B.  $C_4Cl_2H_2$
- C.  $C_6Cl_3H_3$
- D.  $C_8Cl_4H_4$



6. What is the simplest chemical formula for the following compound, which has this percent composition by weight?

carbon 39%  
hydrogen 16%  
nitrogen 45%

- A.  $CH_5N$
- B.  $C_2H_7N$
- C.  $C_2H_6N_2$
- D.  $C_3H_9N$

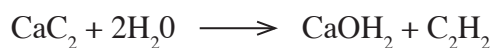
7. After hydrated magnesium sulfate was heated for a prolonged period, the remaining salt was found to have lost 51% of its weight. What was the original formula for the hydrate?

- A.  $MgSO_4 \cdot 2H_2O$
- B.  $MgSO_4 \cdot 4H_2O$
- C.  $Mg_2SO_4 \cdot 8H_2O$
- D.  $MgSO_4 \cdot 7H_2O$

8. A scientist carries out the complete combustion in the air of 44 grams of the compound  $C_aH_bO_c$ . 36 grams of water vapor and 88 grams of carbon dioxide are produced. What is the empirical formula of the compound?

- A.  $C_4H_8O_1$
- B.  $C_2H_4O_1$
- C.  $C_2H_5O_1$
- D.  $C_4H_4O_1$

9. Acetylene is produced in a reaction between calcium carbide and water.



How many grams of  $C_2H_2$  (acetylene) would be formed if 18 ml of water is consumed?

- A. 13 g
- B. 18 g
- C. 26 g
- D. 28 g

10. The combustion of one mole of an unbranched alkane yields 157 liters of gas at STP. The molecular formula of this compound is

- A.  $C_2H_6$
- B.  $C_3H_8$
- C.  $C_4H_{10}$
- D.  $C_5H_{12}$

11. Seeking to verify the identity of a metal, a laboratory determines that the metal combines with oxygen to form a compound with the formula  $X_2O_3$ . 1.6 grams of oxygen combine with 6.75 grams of the unknown metal X. What is the identity of the metal?

- A. Fe
- B. Ru
- C. Os
- D. Pb

12. How many grams of methanol are formed when 14g of carbon monoxide react to completion with 10g of hydrogen gas?

- A. 5 g
  - B. 7 g
  - C. 16 g
  - D. 24 g
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