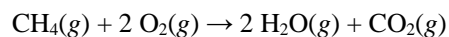


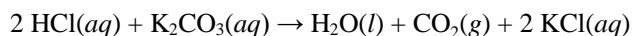


- 
1. How many moles of water are produced when 8.00 moles of methane (CH<sub>4</sub>) are completely combusted according to following chemical equation?



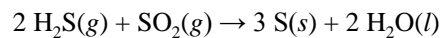
- A. 8.00 moles CO<sub>2</sub>                      C. 4.00 moles CO<sub>2</sub>  
B. 2.00 moles CO<sub>2</sub>                      D. 16.00 moles CO<sub>2</sub>

- 
2. For the following balanced reaction equation, how much carbon dioxide is produced from a reaction of 39.6 grams of potassium carbonate (molar mass = 138.206 g/mol) with an excess of hydrochloric acid?



- A. 12.6 g CO<sub>2</sub>                      C. 39.6 g CO<sub>2</sub>  
B. 15.8 g CO<sub>2</sub>                      D. 6.23 g CO<sub>2</sub>

- 
3. What is the percent yield of sulfur when 28.0 grams of sulfur are formed from the reaction of 44.0 grams of hydrogen sulfide (molar mass = 34.08 g/mol) with 57.6 grams of sulfur dioxide (molar mass = 64.06 g/mol) according to the balanced equation below?



- A. 30.0%                      C. 80.0%  
B. 15.4%                      D. 45.1%
- 

Commented [OU1]: Done!

Commented [LYB2]: I'd at least ask for moles of H<sub>2</sub>O to make it a little tougher. Or, go for a more robust combustion reaction! ☺

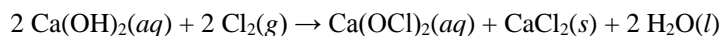
---

4. How many grams of strontium chloride are required to make 3.51 L of a 5.2 *M* strontium chloride solution?

- A.  $1.5 \times 10^3$  g                      C.  $2.9 \times 10^3$  g  
B.  $4.5 \times 10^3$  g                      D.  $9.2 \times 10^3$  g

---

5. According to the following balanced chemical equation, how many grams of calcium chloride (molar mass = 110.98 g/mol) form when 27.00 mL of 0.0496 *M* calcium hydroxide (molar mass = 74.08 g/mol) reacts with excess chlorine gas?



- A.  $1.24 \times 10^{-1}$  g                      C.  $7.43 \times 10^{-2}$  g  
B.  $1.55 \times 10^{-2}$  g                      D.  $6.22 \times 10^{-2}$  g

---

6. What volume of 4.27 *M* sodium hydroxide solution is needed to prepare 75.0 mL of 0.289 *M* sodium hydroxide solution?

- A. 7.62 mL                              C. 35.0 mL  
B. 5.08 mL                              D. 10.2 mL

Commented [LYB3]: I get 5.08 mL

Commented [OU4]: Me too, thanks!

---

7. Which compound is the most soluble in water?

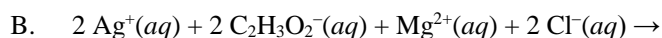
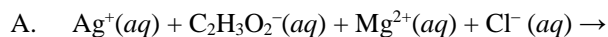
- A. CaS                                      C. CaSO<sub>4</sub>  
B. AgCl                                      D. Ca<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>
-

---

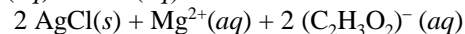
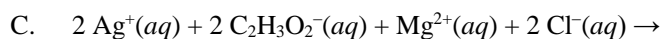
8. What is the complete, balanced, ionic equation for the reaction that occurs when an aqueous solution of silver acetate reacts with magnesium chloride?

Commented [LYB5]: Redundant, but may nudge students in the right direction.

Commented [OU6]: Done!

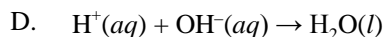
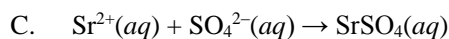
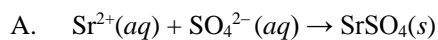


Commented [LYB7]: Not sure if you left these charges out on purpose to make it "wronger" or not.



---

9. What is the net ionic equation for the reaction that occurs when aqueous solutions of strontium hydroxide and lithium sulfate are mixed?



---

10. How much 2.00 M  $\text{Ca}(\text{OH})_2$  solution is required to neutralize 1.24 liters of a 2.00 M HCl solution?

A.  $6.20 \times 10^2$  mL

C.  $3.20 \times 10^2$  mL

B.  $4.44 \times 10^2$  mL

D.  $1.28 \times 10^2$  mL

---

---

11. The titration of 25.0 mL of a sulfuric acid ( $\text{H}_2\text{SO}_4$ ) solution of unknown concentration requires 83.6 mL of 0.12 M LiOH solution to neutralize the acid. What is the concentration of the  $\text{H}_2\text{SO}_4$  solution?

- A. 0.45 M                                      C. 0.64 M  
B. 0.30 M                                      D. 0.20 M

---

12. What is the oxidation state for each element in  $\text{CaCr}_2\text{O}_7$ ?

- A. Ca = +2, Cr = +12, O = -2              C. Ca = +2, Cr = +6, O = -1  
B. Ca = +2, Cr = +6, O = -2              D. Ca = +2, Cr = +10, O = -2

---

13. Identify the redox reaction(s).

- I.  $4 \text{Li}(s) + \text{O}_2(g) \rightarrow 2 \text{Li}_2\text{O}(s)$   
II.  $\text{Mg}(s) + \text{Fe}^{2+}(aq) \rightarrow \text{Mg}^{2+}(aq) + \text{Fe}(s)$   
III.  $\text{Pb}(\text{NO}_3)_2(aq) + \text{Na}_2\text{SO}_4(aq) \rightarrow \text{PbSO}_4(s) + 2 \text{NaNO}_3(aq)$   
IV.  $\text{HBr}(aq) + \text{KOH}(aq) \rightarrow \text{H}_2\text{O}(l) + \text{KBr}(aq)$

- A. I    C. I and II  
B. I, II, and III                                  D. All the above.

---

14. What is 3.80 atm in units of torr?

- A.  $1.14 \times 10^3$  torr                              C.  $4.01 \times 10^3$  torr  
B.  $5.34 \times 10^3$  torr                              D.  $2.89 \times 10^3$  torr
-









**Answer Key:**

1. D
2. A
3. D
4. C
5. C
6. B
7. A
8. C
9. A
10. A
11. D
12. B
13. C
14. D
15. A
16. B
17. C
18. A
19. C
20. A
21. B
22. D
23. A
24. C
25. C