Chemistry 101
Unit #7 Practice Problems

Part A. $\mathbf{Cu_2S + O_2 \rightarrow 2\,Cu + SO_2}$

1. When 10.2 mol $Cu_2S$ react with oxygen, how many moles of Cu are formed?

Given:

Wanted:

Path:

Factors:

2. How many moles of $O_2$ are needed to react with 24.7 mol $Cu_2S$?

Given:

Wanted:

Path:

Factors:

3. If 15.3 mol Cu are formed, how many moles of $SO_2$ are also produced?

Given:

Wanted:

Path:

Factors:

$$\mathbf{Cu_2S + O_2 \rightarrow 2\,Cu + SO_2}$$

4. When 18.2 g $Cu_2S$ react with oxygen, how many moles of $SO_2$ are formed?

Given:

Wanted:

Path:

Factors:

5. How many moles Cu are formed when 34.9 g $O_2$ react with $Cu_2S$?

Given:

Wanted:

Path:

Factors:

6. If 9.8 moles of $Cu_2S$ react with oxygen, how many grams of Cu are formed?

Given:

Wanted:

Path:

Factors:

$$\mathbf{Cu_2S + O_2 \rightarrow 2\,Cu + SO_2}$$

7. When 4.33 mol $O_2$ react with $Cu_2S$, how many grams of $SO_2$ are formed?

Given:

Wanted:

Path:

Factors:

8. When 42.7 g $Cu_2S$ react with oxygen, how many grams of Cu are produced?

Given:

Wanted:

Path:

Factors:

9. When 60.8 g $Cu_2S$ react with oxygen, how many grams of $SO_2$ are produced?

Given:

Wanted:

Path:

Factors:

$$\mathbf{Cu_2S + O_2 \rightarrow 2\,Cu + SO_2}$$

10. How many grams of $O_2$ are required to react with 38.9 g $Cu_2S$?

Given:

Wanted:

Path:

Factors:

11. Calculate the theoretical yield of Cu when 53.2 g $Cu_2S$ react with oxygen.

Given:

Wanted:

Path:

Factors:

12. Calculate the % yield in question #11 if 33.4 g Cu are actually collected.

Given:

Wanted:

Equation:

$$\mathbf{Cu_2S + O_2 \rightarrow 2\,Cu + SO_2}$$

13. Calculate the theoretical yield of copper when 85.0 g $O_2$ react with $Cu_2S$.

Given:

Wanted:

Path:

Factors:

14. If 231 grams Cu are obtained in #13, what is the % yield?

Given:

Wanted:

Equation:

15. If 29.8 g Cu were obtained in the laboratory when the theoretical yield was 36.5 g Cu, what is the % yield for the reaction?

Given:

Wanted:

Equation:

Part B. $\mathbf{2\ Al + 6\ HBr \rightarrow 2\ AlBr_3 + 3\ H_2}$

16. When 14.7 moles Al react with HBr, how many moles $H_2$ are formed?

Given:

Wanted:

Path:

Factors:

17. How many moles of HBr are needed to react with 4.40 mol Al?

Given:

Wanted:

Path:

Factors:

18. When 9.25 moles HBr react with Al, how many moles $AlBr_3$ are formed?

Given:

Wanted:

Path:

Factors:

$$\mathbf{2\ Al\ +\ 6\ HBr\ \rightarrow\ 2\ AlBr_3\ +\ 3\ H_2}$$

19. When 6.88 moles HBr react with Al, how many moles H2 are formed?

Given:

Wanted:

Path:

Factors:

20. When 15.6 mol Al react with HBr, how many grams of $AlBr_3$ are formed?

Given:

Wanted:

Path:

Factors:

21. When 85.2 g HBr react with Al, how many moles of $H_2$ are produced?

Given:

Wanted:

Path:

Factors:

$$\mathbf{2\ Al\ +\ 6\ HBr\ \rightarrow\ 2\ AlBr_3\ +\ 3\ H_2}$$

22. When 10.0 mol HBr react with Al, how many grams of $H_2$ are formed?

Given:

Wanted:

Path:

Factors:

23. How many moles HBr are required to react with 72.8 g of Al?

Given:

Wanted:

Path:

Factors:

24. How many grams of $AlBr_3$ can be formed when 95.3 g Al react with HBr?

Given:

Wanted:

Path:

Factors:

$$\mathbf{2\ Al\ +\ 6\ HBr\ \rightarrow\ 2\ AlBr_3\ +\ 3\ H_2}$$

25. How many grams of HBr are needed to react with 48.2 g Al?

Given:

Wanted:

Path:

Factors:

26. When 235 g HBr react with Al, how many grams of $H_2$ are produced?

Given:

Wanted:

Path:

Factors:

27. To form 65.0 g $AlBr_3$, how many grams of Al must react with HBr?

Given:

Wanted:

Path:

Factors:

$$\mathbf{2\ Al\ +\ 6\ HBr\ \rightarrow\ 2\ AlBr_3\ +\ 3\ H_2}$$

28. Calculate the theoretical yield of $AlBr_3$ when 20.0 g Al react with HBr.

Given:

Wanted:

Path:

Factors:

29. If 175 g $AlBr_3$ are obtained in #28, what is the % yield?

Given:

Wanted:

Equation:

30. Calculate the theoretical yield of $H_2$ when 30.0 g Al react with HBr.

Given:

Wanted:

Path:

Factors:

31. If 3.08 g of $H_2$ are obtained in #30, what is the % yield?

Given:

Wanted:

Equation: