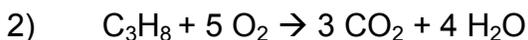


## Percent, Actual, and Theoretical Yield



a) I began this reaction with 20 grams of lithium hydroxide. What is my theoretical yield of lithium chloride?

b) I actually produced 6 grams of lithium chloride. What is my percent yield?



a) If I start with 5 grams of  $\text{C}_3\text{H}_8$ , what is my theoretical yield of water?

b) I got a percent yield of 75%. How many grams of water did I make?



My theoretical yield of beryllium chloride was 10.7 grams. If my actual yield was 4.5 grams, what was my percent yield?

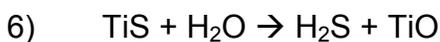


What is my theoretical yield of sodium oxide if I start with 20 grams of calcium oxide?



a) What is my theoretical yield of iron (II) chloride if I start with 34 grams of iron (II) bromide?

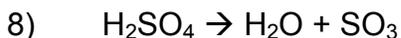
b) What is my percent yield of iron (II) chloride if my actual yield is 4 grams?



What is my percent yield of titanium (II) oxide if I start with 20 grams of titanium (II) sulfide and my actual yield of titanium (II) oxide is 22 grams?



What is my actual yield of uranium hexabromide if I start with 100 grams of uranium and get a percent yield of 83% ?



If I start with 89 grams of sulfuric acid and produce 7.1 grams of water, what is my percent yield?

## Percent, Actual, and Theoretical Yield SOLUTION KEY

- 1)  $\text{LiOH} + \text{KCl} \rightarrow \text{LiCl} + \text{KOH}$
- a) I began this reaction with 20 grams of lithium hydroxide. What is my theoretical yield of lithium chloride? **35.5 grams**
- b) I actually produced 6 grams of lithium chloride. What is my percent yield? **16.9%**
- 2)  $\text{C}_3\text{H}_8 + 5 \text{O}_2 \rightarrow 3 \text{CO}_2 + 4 \text{H}_2\text{O}$
- a) If I start with 5 grams of  $\text{C}_3\text{H}_8$ , what is my theoretical yield of water? **8.2 grams**
- b) I got a percent yield of 75%. How many grams of water did I make? **6.1 grams**
- 3)  $\text{Be} + 2 \text{HCl} \rightarrow \text{BeCl}_2 + \text{H}_2$
- My theoretical yield of beryllium chloride was 10.7 grams. If my actual yield was 4.5 grams, what was my percent yield? **42.1 %**
- 4)  $2 \text{NaCl} + \text{CaO} \rightarrow \text{CaCl}_2 + \text{Na}_2\text{O}$
- What is my theoretical yield of sodium oxide if I start with 20 grams of calcium oxide?  
**22.1 grams**
- 5)  $\text{FeBr}_2 + 2 \text{KCl} \rightarrow \text{FeCl}_2 + 2 \text{KBr}$
- a) What is my theoretical yield of iron (II) chloride if I start with 34 grams of iron (II) bromide? **20.0 grams of  $\text{FeCl}_2$**
- b) What is my percent yield of iron (II) chloride if my actual yield is 4 grams? **20 %**
- 6)  $\text{TiS} + \text{H}_2\text{O} \rightarrow \text{H}_2\text{S} + \text{TiO}$
- What is my percent yield of titanium (II) oxide if I start with 20 grams of titanium (II) sulfide and my actual yield of titanium (II) oxide is 22 grams?
- 137.5 % (theoretical yield is 16.0 grams – students should recognize that this is a trick question, designed to see if they know that 100% is the highest yield possible)**
- 7)  $\text{U} + 3 \text{Br}_2 \rightarrow \text{UBr}_6$
- What is my actual yield of uranium hexabromide if I start with 100 grams of uranium and get a percent yield of 83% ? **301.4 grams  $\text{UBr}_6$**
- 8)  $\text{H}_2\text{SO}_4 \rightarrow \text{H}_2\text{O} + \text{SO}_3$
- If I start with 89 grams of sulfuric acid and produce 7.1 grams of water, what is my percent yield? **250.2 grams**