

$$\% \text{ yield} = \frac{\text{actual yield}}{\text{Theoretical yield}} \times 100$$

5) Calculate the percent yields in each of the following cases:

- Theoretical yield 50.0 g of product; actual yield 41.9 g
- Theoretical yield is 290 kg of product; actual yield is 270 kg
- Theoretical yield is 64 kg of product; actual yield is 324 g

a.)  $\frac{41.9 \text{ g}}{50.0 \text{ g}} \times 100 = \boxed{83.8\%}$

c.)  $\frac{324 \text{ g}}{64000 \text{ g}} = \boxed{0.5\%}$

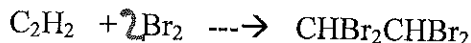
b.)  $\frac{270 \text{ kg}}{290 \text{ kg}} \times 100 = \boxed{93.1\%}$



What is the percent yield, if the quantity of reactants is sufficient to produce 0.86 g of  $\text{Cl}_2\text{O}$  but only 0.71 g is obtained?

$\frac{0.71 \text{ g}}{0.86 \text{ g}} \times 100 = \boxed{82.5\%}$

7) Using the following reaction:

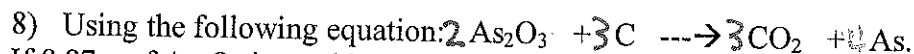


Must find theoretical yield  
If 72.0 g of  $\text{C}_2\text{H}_2$  reacts with 23.5 grams of excess bromine and 729 g of the product is recovered, what is the percent yield of the reaction?  
mass  $\rightarrow$  mass

$\frac{729 \text{ g}}{957.0 \text{ g}} = \boxed{76.1\%}$

72.0 g $\text{C}_2\text{H}_2$	$\frac{1 \text{ mol } \text{C}_2\text{H}_2}{26 \text{ g } \text{C}_2\text{H}_2}$	$\frac{2 \text{ mol } \text{CHBr}_2\text{CHBr}_2}{1 \text{ mol } \text{C}_2\text{H}_2}$	$\frac{345.6 \text{ g Prod}}{1 \text{ mol Prod}}$
		$\frac{1 \text{ mol } \text{C}_2\text{H}_2}{26 \text{ g } \text{C}_2\text{H}_2}$	$\frac{1 \text{ mol Prod}}{345.6 \text{ g Prod}}$

$\Rightarrow 957.0 \text{ g Prod}$

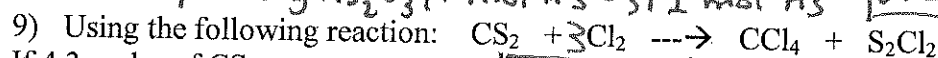


Must find theoretical yield  
If 8.87 g of  $\text{As}_2\text{O}_3$  is used in the reaction and 5.33 g of As is produced, what is the percent yield?

$\frac{5.33 \text{ g}}{6.21 \text{ g}} = \boxed{85.8\%}$

8.87 g $\text{As}_2\text{O}_3$	$\frac{1 \text{ mol } \text{As}_2\text{O}_3}{213.8 \text{ g } \text{As}_2\text{O}_3}$	$\frac{2 \text{ mol } \text{As}}{1 \text{ mol } \text{As}_2\text{O}_3}$	$\frac{74.9 \text{ g As}}{1 \text{ mol As}}$
		$\frac{1 \text{ mol } \text{As}_2\text{O}_3}{213.8 \text{ g } \text{As}_2\text{O}_3}$	$\frac{1 \text{ mol As}}{74.9 \text{ g As}}$

$\Rightarrow 6.21 \text{ g As}$



If 4.3 moles of  $\text{CS}_2$  were to react with 5.6 moles  $\text{Cl}_2$  what is the limiting reactant?

The above reaction produced 211 g  $\text{CCl}_4$ , what is the percent yield?

4.3 mol  $\text{CS}_2$   $\frac{3 \text{ mol } \text{Cl}_2}{1 \text{ mol } \text{CS}_2} = \boxed{12.9 \text{ mol } \text{Cl}_2}$

5.6 mol  $\text{Cl}_2$   $\frac{1 \text{ mol } \text{CS}_2}{3 \text{ mol } \text{Cl}_2} = \boxed{1.86 \text{ mol } \text{CS}_2}$

2) 5.6 mol  $\text{Cl}_2$   $\frac{1 \text{ mol } \text{CCl}_4}{3 \text{ mol } \text{Cl}_2} = \boxed{1.86 \text{ mol } \text{CCl}_4}$

$\frac{153.6 \text{ g CCl}_4}{1 \text{ mol CCl}_4} = \boxed{153.6 \text{ g CCl}_4}$

$\frac{211 \text{ g CCl}_4}{153.6 \text{ g CCl}_4} = \boxed{1.37\%}$