

### CH1020 Exercises (Worksheet 4)

- 1) In the reaction  $A + B \rightarrow C + D$ , 3.00 grams of substance C and 3.00 grams of substance D are produced as 2.00 grams of substance A are consumed. How many grams of substance B are also consumed?

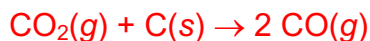
4.00g of B

- 2) Combustion of sulfur may, depending on reaction conditions, produce  $\text{SO}_2$  or  $\text{SO}_3$ . If  $x$  grams of  $\text{O}_2$  combine with  $y$  grams of sulfur to form  $\text{SO}_2$ , how many grams of  $\text{O}_2$  combine with  $y$  grams of sulfur to form  $\text{SO}_3$ ?

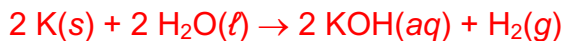
1.5 x grams of oxygen

- 3) Write a balanced chemical equation for each of the following reactions:

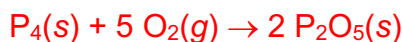
- a) Carbon dioxide reacts with carbon to form carbon monoxide.



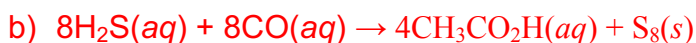
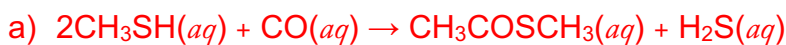
- b) Potassium reacts with water to give potassium hydroxide and the element hydrogen



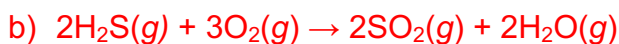
- c) Phosphorus ( $\text{P}_4$ ) burns in air to give diphosphorus pentoxide.



- 4) Some scientists believe that life on Earth originated near geothermal vents. Balance the following reactions, which are among those taking place near such vents:



- 5) Balance the following reactions that occur during volcanic eruptions:



- 6) Copper was one of the first metals used by humans because it can be recovered from several copper minerals including cuprite ( $\text{Cu}_2\text{O}$ ), chalcocite ( $\text{Cu}_2\text{S}$ ), and malachite [ $\text{Cu}_2\text{CO}_3(\text{OH})_2$ ]. Balance the following reactions for converting these minerals into copper metal:

