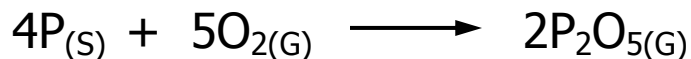


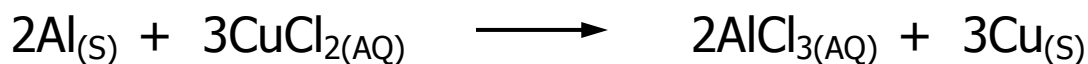
Stoichiometry Practice Test Part II

Reaction set 1



1. What is the mole ratio for this balanced chemical reaction?
 2. What is the type of reaction of the five you have learned of so far this year?
 3. If you were to use 587.3 moles of phosphorous, how many moles of oxygen would be required to completely react that?
 4. You consume 99.99 grams of phosphorous, how many grams of diphosphorous pentoxide would form?
 5. If you are limited to 20.9 liters of oxygen, how many atoms of phosphorous can react in this reaction?
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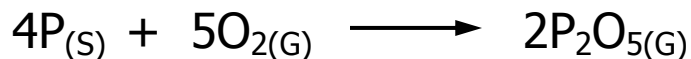
Reaction set 2



6. what is the mole ratio for this balanced chemical reaction?
7. What is the type of reaction of the five you have learned of so far this year?
8. If you were to use 436.0 moles of aluminum, how many moles of copper (II) chloride would be required to completely react that?
9. You consume 88.88 grams of aluminum, how many moles of aluminum chloride would form?
10. If you are limited to 9.03×10^{24} atoms of aluminum, how many atoms of copper would form in the reaction?

Stoichiometry Practice Test Part II ANSWERS

Reaction set 1



1. What is the mole ratio for this balanced chemical reaction? **4:5:2**
2. What is the type of reaction of the five you have learned of so far this year? **synthesis**
3. If you were to use 587.3 moles of phosphorous, how many moles of oxygen would be required to completely react that?

Mole ratio method $\frac{\text{P}}{\text{O}_2} \frac{4}{5} \frac{587.3}{x}$ solve for x $4x = 2936.5$
 $x = 734.1$ moles O_2

Dimensional analysis method $\frac{587.3 \text{ mole P}}{1} \times \frac{5 \text{ mole O}_2}{4 \text{ mole P}} = 734.1 \text{ moles O}_2$

4. You consume 99.99 grams of phosphorous, how many grams of diphosphorous pentoxide would form?

Step 1 set up

Mole ratio method $\frac{\text{P}}{\text{P}_2\text{O}_5} \frac{4}{2} \frac{3.225}{x}$ $\xrightarrow{\text{Step 3 solve for x}}$ $4x = 6.450$
 $x = 1.613$ moles P_2O_5

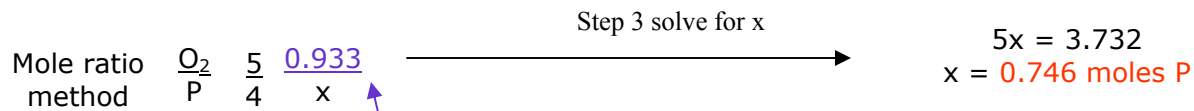
$\frac{99.99 \text{ g P}}{1} \times \frac{1 \text{ mole P}}{31 \text{ g P}} = 3.225$ $\xrightarrow{\text{Step 2 convert grams to moles}}$ 3.225

$1.613 \text{ mole P}_2\text{O}_5 \times \frac{142 \text{ g P}_2\text{O}_5}{1 \text{ mole P}_2\text{O}_5} = 229.0 \text{ g P}_2\text{O}_5$ $\xleftarrow{\text{Step 4 convert moles to grams}}$

Dimensional analysis method $\frac{99.99 \text{ g P}}{1} \times \frac{1 \text{ mol P}}{31 \text{ g P}} \times \frac{2 \text{ mol P}_2\text{O}_5}{4 \text{ mol P}} \times \frac{142 \text{ g P}_2\text{O}_5}{1 \text{ mol P}_2\text{O}_5} \times \frac{28397.16}{124} = 229.0 \text{ g P}_2\text{O}_5$

5. If you are limited to 20.9 liters of oxygen, how many atoms of phosphorous can react in this reaction?

Step 1 set up



$$\frac{20.9 \text{ L O}_2}{1} \times \frac{1 \text{ mole O}_2}{22.4 \text{ L O}_2} = 0.933 \text{ L O}_2$$

Step 2 convert liters to moles

Step 4 convert moles to grams

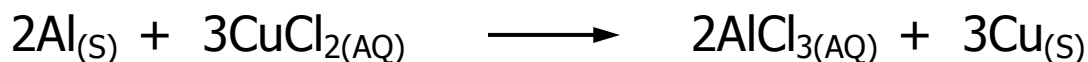
$$\frac{0.746 \text{ moles P}}{1} \times \frac{6.02 \times 10^{23} \text{ atoms P}}{1 \text{ mole P}} = 4.49 \times 10^{23} \text{ atoms P}$$

Dimensional analysis method $\frac{20.9 \text{ L O}_2}{1} \times \frac{1 \text{ mol O}_2}{22.4 \text{ L O}_2} \times \frac{4 \text{ mol P}}{5 \text{ mol O}_2} \times \frac{6.02 \times 10^{23} \text{ atoms P}}{1 \text{ mol P}} =$

continued on next line

$$\frac{503.272 \times 10^{23}}{112} = 4.49 \times 10^{23} \text{ atoms P}$$

Reaction set 2 ANSWERS



6. What is the mole ratio for this balanced chemical reaction? **2:3:2:3**
7. What is the type of reaction of the five you have learned of so far this year? **single replacement**
8. If you were to use 436.0 moles of aluminum, how many moles of copper (II) chloride would be required to completely react that?

Mole ratio	$\frac{\text{Al}}{\text{CuCl}_2}$	$\frac{2}{3}$	$\frac{436.0}{x}$	solve for x	$2x = 1308$
method					$x = 654.0 \text{ moles CuCl}_2$

Dimensional analysis method $\frac{436.0 \text{ mole Al}}{1} \times \frac{3 \text{ mole CuCl}_2}{2 \text{ mole Al}} = 654.0 \text{ moles CuCl}_2$

9. You consume 88.88 grams of aluminum, how many moles of aluminum chloride would form?

Step 1 set up

Mole ratio	$\frac{\text{Al}}{\text{AlCl}_3}$	$\frac{2}{2}$	$\frac{3.292}{x}$	Step 3 solve for x	$2x = 6.584$
method					$x = 3.292 \text{ moles AlCl}_3$

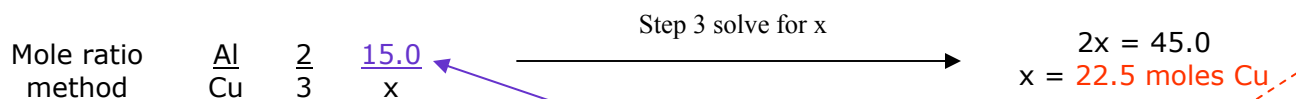
$\frac{88.88 \text{ g Al}}{1} \times \frac{1 \text{ mole Al}}{27 \text{ g Al}} = 3.292 \text{ mole Al}$

Step 2 convert grams to moles

Dimensional analysis method $\frac{88.88 \text{ g Al}}{1} \times \frac{1 \text{ mol Al}}{27 \text{ g Al}} \times \frac{2 \text{ mol AlCl}_3}{2 \text{ mol Al}} = \frac{177.76}{54} = 3.292 \text{ moles AlCl}_3$

10. If you are limited to 9.03×10^{24} atoms of aluminum, how many atoms of copper would form in the reaction?

Step 1 set up



$$\frac{9.03 \times 10^{24} \text{ atoms Al}}{1} \times \frac{1 \text{ mole Al}}{6.02 \times 10^{23} \text{ atoms Al}} = 1.50 \times 10^1 \text{ moles Al} = 15.0 \text{ moles Al}$$

Step 2 convert grams to moles

Step 4 convert moles to particles

$$\frac{22.5 \text{ moles Cu}}{1} \times \frac{6.02 \times 10^{23} \text{ atoms Cu}}{1 \text{ mole Cu}} = 135.45 \times 10^{23} \text{ atoms Cu} = 1.35 \times 10^{25} \text{ atoms Cu}$$

Dimensional analysis method

$$\frac{9.03 \times 10^{24} \text{ atoms Al}}{1} \times \frac{1 \text{ mol Al}}{6.02 \times 10^{23} \text{ atoms Al}} \times \frac{3 \text{ mol Cu}}{2 \text{ mol Al}} \times \frac{6.02 \times 10^{23} \text{ atoms Cu}}{1 \text{ mol Cu}} =$$

$$\frac{163.0818 \times 10^{23}}{12.04} = 135 \times 10^{23} \text{ atoms Cu} = 1.35 \times 10^{25} \text{ atoms Cu}$$