

# Exam #2 Review Questions

# CHUNK #2

19	What mass of sodium hydroxide is made from $1.20 \times 10^2$ g of sodium oxide? $\text{Na}_2\text{O} + \text{H}_2\text{O} \rightarrow 2 \text{NaOH}$
20	A human needs about 120. grams of glucose per day. How many grams of carbon dioxide are used by plants to produce this amount of glucose? $6 \text{CO}_2 + 6 \text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{O}_2$
21	$2 \text{NaClO}_3 \rightarrow 2 \text{NaCl} + 3 \text{O}_2$ How many molecules of oxygen are produced when 80.0 grams of sodium chloride are produced?
22	How many moles of copper react with 3.50 moles of silver nitrate? $\text{Cu} + 2 \text{AgNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + 2 \text{Ag}$
23	Chlorine is used by textile manufacturers to bleach cloth. Excess chlorine is destroyed by its reaction with sodium thiosulfate, $\text{Na}_2\text{S}_2\text{O}_3$ : $\text{Na}_2\text{S}_2\text{O}_3(\text{aq}) + 4\text{Cl}_2(\text{g}) + 5\text{H}_2\text{O}(\text{aq}) \rightarrow 2\text{NaHSO}_4(\text{aq}) + 8\text{HCl}(\text{aq})$ How many moles of $\text{H}_2\text{O}$ react if $5.24 \times 10^{19}$ molecules of $\text{HCl}$ are formed?
24	The incandescent white of a fireworks display is caused by the reaction of phosphorous with $\text{O}_2$ to give $\text{P}_4\text{O}_{10}$ . How many grams of P are needed to make 7.46g $\text{P}_4\text{O}_{10}$ ?
25	The explosive known as TNT (trinitrotoluene) is very useful because all of the energy is stored in the TNT, so the explosion can occur even if there is no oxygen present. The explosion of TNT is a decomposition reaction: $2 \text{C}_7\text{H}_5\text{N}_3\text{O}_6 \rightarrow 7 \text{CO} + 7 \text{C} + 5 \text{H}_2\text{O} + 3 \text{N}_2$ A forensic chemist who happens to be exceptionally good as his job is investigating the site of a TNT blast is able to determine that there are 351 grams of carbon residue left by the explosion. How many grams of TNT were used for the explosion?
26	$2 \text{H}_2\text{S} + 3 \text{O}_2 \rightarrow 2 \text{H}_2\text{O} + 2 \text{SO}_2$ What mole ratios can be made from this reaction? Hint: Here's one: 2 mol $\text{H}_2\text{S}$ : 3 mol $\text{O}_2$
27	How many moles of sodium atoms correspond to $1.56 \times 10^{21}$ atoms of sodium?
28	Caustic soda, $\text{NaOH}$ , can be prepared commercially by the reaction of $\text{Na}_2\text{CO}_3$ with slaked lime, $\text{Ca}(\text{OH})_2$ . how many g of $\text{NaOH}$ can be obtained by treating 1.000 kg of $\text{Na}_2\text{CO}_3$ with $\text{Ca}(\text{OH})_2$ ?
29	How many g of $\text{CaCl}_2$ does it take to produce 14.3 g of $\text{AgCl}$ when treated with excess $\text{AgNO}_3$ ? $\text{Ca}(\text{NO}_3)_2$ is the other product.
30	A 0.6000 mol sample of $\text{Cu}_2\text{S}$ is roasted in excess oxygen to yield copper metal and sulfur dioxide. Calculate the mass of copper metal produces.
31	The human body needs at least $1.03 \times 10^{-2}$ mol $\text{O}_2$ every minute. If all of this oxygen is used for the cellular respiration reaction that breaks down glucose, how many grams of glucose does the human body consume each minute? $\text{C}_6\text{H}_{12}\text{O}_6(\text{s}) + 6 \text{O}_2(\text{g}) \rightarrow 6 \text{CO}_2(\text{g}) + 6 \text{H}_2\text{O}(\text{l})$
32	$\text{Cu} + 2 \text{AgNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + 2 \text{Ag}$ If 89.5 grams of silver were produced, how many grams of copper reacted?
33	How many moles are there in $2.35 \times 10^{24}$ molecules of water?
34	How many grams does $5.60 \times 10^{22}$ molecules of $\text{SiO}_2$ weigh?
35	If 20.0 grams of zinc react with excess hydrochloric acid, how many grams of zinc chloride are produced? $\text{Zn} + \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$
36	How many grams of chlorine gas must be reacted with excess sodium iodide if 10.0 grams of sodium chloride are needed? $\text{NaI} + \text{Cl}_2 \rightarrow \text{NaCl} + \text{I}_2$