

Chapter 10 & 12 Jeopardy Game

	Value	Question	Answer
Chemical Equations	200	What symbol indicates “yield” or “react to produce”?	Arrow
	400	What symbol indicates that a substance is dissolved in water?	(aq)
	600	What is the formula for oxygen by itself in a chemical equation?	O ₂
	800	What does the symbol “Δ” placed above the arrow indicate?	Heat
	1000	What is an unbalanced equation containing the correct formulas of all substances in a reaction called?	Skeleton Equation
Reaction Types	200	$2 \text{Li (s)} + \text{Br}_2 \text{(l)} \rightarrow 2 \text{LiBr (s)}$	Synthesis
	400	$2 \text{KClO}_3 \text{(s)} \rightarrow 2 \text{KCl (s)} + 3 \text{O}_2 \text{(g)}$	Decomposition
	600	$3 \text{F}_2 \text{(g)} + 2 \text{GaI}_3 \text{(aq)} \rightarrow 2 \text{GaF}_3 \text{(aq)} + 3 \text{I}_2 \text{(s)}$	Single Repl.
	800	$\text{C}_3\text{H}_8 \text{(g)} + 5 \text{O}_2 \text{(g)} \rightarrow 3 \text{CO}_2 \text{(g)} + 4 \text{H}_2\text{O (g)}$	Combustion
	1000	$2 \text{H}_3\text{PO}_4 \text{(aq)} \rightarrow \text{H}_4\text{P}_2\text{O}_7 \text{(aq)} + \text{H}_2\text{O (l)}$	Decomposition
Balancing Reactions	200	Number that represents the number of moles of a substance in a balanced chemical equation.	Coefficient
	400	Number you should never, never, EVER change when balancing a chemical equation.	Subscript
	600	Number needed to balance this equation: $\text{P}_4\text{O}_{10} + 6 \text{H}_2\text{O} \rightarrow \underline{\quad} \text{H}_3\text{PO}_4$	4
	800	Balance this equation: $\underline{\quad} \text{Sb} + \underline{\quad} \text{O}_2 \rightarrow \underline{\quad} \text{Sb}_4\text{O}_6$	4, 3, 1
	1000	Balance this equation: $\underline{\quad} \text{Al} + \underline{\quad} \text{HCl} \rightarrow \underline{\quad} \text{AlCl}_3 + \underline{\quad} \text{H}_2$	2, 6, 2, 3
Replacement Reactions	200	What common solvent is used for both single- and double-replacement reactions?	Water
	400	What are the formula and solubility of this ion pair: Fe ³⁺ and S ²⁻ ?	Fe ₂ S ₃ insoluble
	600	Name for the solid produced during a chemical reaction in a solution.	Precipitate
	800	Products (formulas) of the reaction $\text{Na (s)} + \text{FeCl}_3 \text{(aq)} \rightarrow$	NaCl + Fe
	1000	Insoluble product (formula) of the reaction $\text{Ca(NO}_3)_2 \text{(aq)} + \text{K}_2\text{SO}_4 \text{(aq)} \rightarrow$	CaSO ₄
Stoichiometry	200	Balanced equations obey the Law of Conservation of _____.	Mass
	400	What is the mole ratio to calculate mass of Al ₂ O ₃ produced from mass of Al in the reaction $4 \text{Al} + 3 \text{O}_2 \rightarrow 2 \text{Al}_2\text{O}_3$?	$\frac{2 \text{Al}_2\text{O}_3}{4 \text{Al}}$
	600	What is the reactant that is used up in a chemical reaction called?	Limiting
	800	What is the amount of product that can be produced in a chemical reaction called?	Theoretical Yield
	1000	How is the actual yield in a chemical reaction determined?	Measured
Potpourri	200	What are the substances that go into a reaction called?	Reactants
	400	What is the ratio of the actual yield to the theoretical yield multiplied by 100 called?	Percent Yield
	600	In the reaction, $\text{Cu (s)} + 2\text{AgNO}_3 \text{(aq)} \rightarrow \text{Cu(NO}_3)_2 \text{(aq)} + 2\text{Ag (s)}$, what is being reduced?	Ag ⁺
	800	Sulfide (S ²⁻) compounds are usually insoluble except when they contain NH ₄ ⁺ or what type of metal ion?	Alkali Metal
	1000	Name both of the products of the reaction $\text{C}_2\text{H}_6 \text{(g)} + \text{O}_2 \text{(g)} \rightarrow$	Carbon Dioxide & Water

Final Jeopardy Category: Theoretical Yield

For the reaction, $4 \text{P} + 5 \text{O}_2 \rightarrow 2 \text{P}_2\text{O}_5$, what is the theoretical yield (in moles) of P₂O₅ if 8 moles of P reacts with 16 moles of O₂? **Answer: 4 moles P₂O₅:**

$$\text{mol eq. P} = \frac{8 \text{ mol P}}{4 \text{ mol P}} = 2; \text{ mol eq. O}_2 = \frac{16 \text{ mol O}_2}{5 \text{ mol O}_2} = 3.2$$

$2 < 3.2, \therefore \text{P is limiting}$

$$? \text{ mol P}_2\text{O}_5 = 8 \text{ mol P} \times \frac{2 \text{ mol P}_2\text{O}_5}{4 \text{ mol P}} = 4 \text{ mol mol P}_2\text{O}_5$$