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Periodic Table With Chemistry Formulas SparkCharts

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CHEMISTRY FORMULAS

ATOMIC AND MOLECULAR WEIGHTS

A. Atomic Weight: The relative mass of an element, based on the standard atomic weight of carbon-12 (^{12}C), is 12.011 amu.

B. Molecular Weight: The sum of the atomic weights of the atoms in a molecule.

C. Formula Weight: The sum of the atomic weights of the atoms in a chemical formula.

D. Molar Mass: The mass of one mole of a substance, expressed in grams per mole (g/mol).

TEMPERATURE CONVERSION

A. Celsius to Fahrenheit:

$$F = \frac{9}{5}C + 32$$

B. Fahrenheit to Celsius:

$$C = \frac{5}{9}(F - 32)$$

C. Kelvin to Celsius:

$$C = K - 273.15$$

D. Celsius to Kelvin:

$$K = C + 273.15$$

IDEAL GAS LAWS

A. Boyle's Law: Pressure is inversely proportional to volume at constant temperature.

$$P_1V_1 = P_2V_2$$

B. Charles's Law: Volume is directly proportional to temperature at constant pressure.

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$

C. Gay-Lussac's Law: Pressure is directly proportional to temperature at constant volume.

$$\frac{P_1}{T_1} = \frac{P_2}{T_2}$$

D. Combined Gas Law:

$$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$$

E. Ideal Gas Law:

$$PV = nRT$$

CHEMICAL EQUILIBRIUM

A. Equilibrium Constant (K_c):

$$K_c = \frac{[\text{Products}]}{[\text{Reactants}]}$$

B. Reaction Quotient (Q_c):

$$Q_c = \frac{[\text{Products}]}{[\text{Reactants}]}$$

C. Le Chatelier's Principle: If a system at equilibrium is subjected to a change in concentration, temperature, or pressure, the system will shift to counteract the change.

ACID-BASE EQUILIBRIUM

A. Acid Dissociation Constant (K_a):

$$K_a = \frac{[\text{H}^+][\text{A}^-]}{[\text{HA}]}$$

B. Base Dissociation Constant (K_b):

$$K_b = \frac{[\text{OH}^-][\text{B}]}{[\text{BOH}]}$$

C. pH and pOH:

$$\text{pH} = -\log[\text{H}^+]$$

$$\text{pOH} = -\log[\text{OH}^-]$$

$$\text{pH} + \text{pOH} = 14$$

SOLUBILITY

A. Solubility Product Constant (K_{sp}):

$$K_{sp} = [\text{Cations}][\text{Anions}]$$

B. Common Ion Effect: The solubility of a salt is decreased by the presence of a common ion.

BALANCING CHEMICAL EQUATIONS

A. Conservation of Mass: The total mass of the reactants must equal the total mass of the products.

B. Conservation of Atoms: The number of atoms of each element must be the same on both sides of the equation.

PERCENTAGE AND RATIO

A. Percent Composition: The percentage of each element in a compound.

B. Molar Ratio: The ratio of the number of moles of each substance in a chemical reaction.

COLLIGATIVE PROPERTIES

A. Raoult's Law: The vapor pressure of a solution is proportional to the mole fraction of the solvent.

B. Boiling Point Elevation: The boiling point of a solution is higher than that of the pure solvent.

C. Freezing Point Depression: The freezing point of a solution is lower than that of the pure solvent.

REACTION RATES

A. Rate of Reaction: The change in concentration of a reactant or product per unit time.

B. Rate Law: An equation that relates the rate of a reaction to the concentrations of the reactants.

C. Activation Energy (E_a): The minimum energy required for a reaction to occur.

THERMODYNAMICS

A. Enthalpy Change (ΔH): The heat absorbed or released during a reaction at constant pressure.

B. Entropy Change (ΔS): The change in disorder or randomness during a reaction.

C. Gibbs Free Energy Change (ΔG): The maximum work that can be obtained from a reaction at constant temperature and pressure.

ELECTROCHEMISTRY

A. Standard Cell Potential (E°): The potential difference between two half-cells under standard conditions.

B. Nernst Equation: An equation that relates the cell potential to the concentrations of the reactants and products.

SIGNIFICANT FIGURES

A. Addition and Subtraction: The result should have the same number of decimal places as the least precise measurement.

B. Multiplication and Division: The result should have the same number of significant figures as the least precise measurement.

RADIOACTIVE DECAY

A. Half-life ($t_{1/2}$): The time required for half of a sample of a radioactive substance to decay.

B. Decay Constant (λ): A constant that represents the probability of a nucleus decaying per unit time.

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Synopsis

SparkCharts®: The information you need—concisely, conveniently, and accurately. Created by Harvard students for students everywhere, these study companions and reference tools cover a wide range of college and graduate school subjects, from Business and Computer Programming to Medicine, Law, and Languages. They'll give you what it takes to find success in school and beyond. Outlines and summaries cover key points, while diagrams and tables make difficult concepts easier to grasp. This two-page chart is a perfect reference for homework and problem sets. On side one, the chart lists the most important chemical formulas and provides quick refreshers on significant figures and balancing equations. Side two includes a beautiful periodic table that gives the following information for each element: Name Atomic number Atomic symbol Atomic mass Oxidation states (most stable state in bold) Electronegativity Electron affinity First ionization potential Atomic radius Electron shell configuration

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Customer Reviews

Very useful for my chem class at the university of Minnesota

A nice-looking periodic table for quick reference! What more could you want?

Item arrived promptly and as described! Would use again!

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