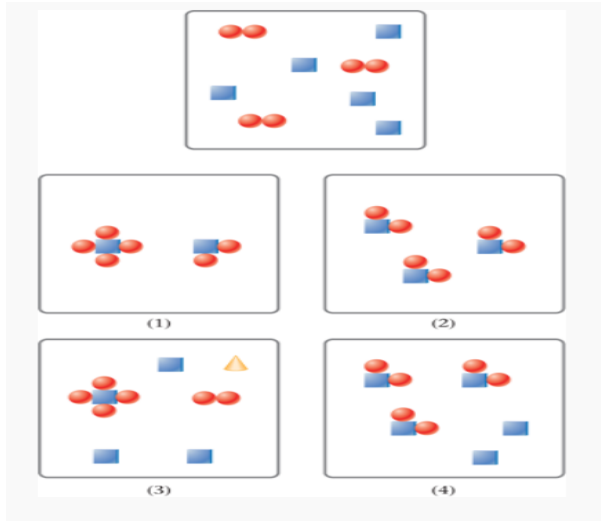


Unit 2 Homework Problem Sets

Set #1: Atomic Models

Problems 1, 2, 4, 5, 6, 80 & 85 at the end of Chapter 2

Problem Number	Problem Number
1. State in your own words the law of conservation of mass. State the law in its modern form.	6. Who discovered the nucleus? Describe the experiment that led to this discovery.
2. State in your own words the law of constant composition.	80. Use the law of conservation of mass to determine which numbered box(es) represent(s) the product mixture after the substances in the unnumbered box undergo a reaction.
4. Two basic laws of chemistry are the law of conservation of mass and the law of constant composition. Which of these laws (if any) do the following statements illustrate? a. The mass of phosphorus, P_4, combined with one gram of hydrogen, H_2, in the highly toxic gas phosphene, PH_3, is a little more than twice the mass of nitrogen, N_2, combined with one gram of hydrogen in ammonia gas, NH_3. b. A cold pack has the same mass before and after the seal between two reactants is broken to allow reaction to occur. c. It is highly improbable that carbon monoxide gas found in Los Angeles is $C_{1.2}O_{1.1}$.	
5. Who discovered the electron? Describe the experiment that led to the deduction that electrons are negatively charged particles.	85. Mercury(II) oxide, a red powder, can be decomposed by heating to produce liquid mercury and oxygen gas. When a sample of this compound is decomposed, 3.87 g of oxygen and 48.43 g of mercury are produced. In a second experiment, 15.68 g of mercury is allowed to react with an excess of oxygen and 16.93 g of red mercury(II) oxide is produced. Show that these results are consistent with the law of constant composition.