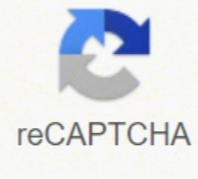




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Balancing chemical equations answers pdf phet

Please wait while your url is generating... 3 Resolution: Image Size: Download Transcript BALANCING CHEMICAL EQUATIONS - PHET CP Chemistry Unit 5: Stoichiometry NAME: _____ DATE: _____ PERIOD: ____ LEARNING GOALS: Balance chemical equations by applying the laws of conservation of mass and constant composition (definite proportions). 1. 2. Google PhET Balancing Chemical Equations and click on the first Link or go to Click on the "Run in HTML 5" BUTTON PRE-LAB: Use the simulation to adjust the coefficients and balance the following equation. Remember a coefficient cannot be zero. Z 1. Investigate the different tools offered by the simulator such as the bar graph or scale. 2. Fill in the proper coefficients when you are successful (yellow smiley face). 3. Once you have balanced the equation, draw the molecules in the table below $\text{N}_2 + \text{H}_2 \rightarrow \text{NH}_3$ N2 H2 NH3 Explore the simulation with your partner. Discuss what you find and answer the questions below. 1. Write the balanced chemical below: Separation of water $\text{H}_2\text{O} \rightarrow \text{H}_2 + \text{O}_2$ Combust of methane $\text{CH}_4 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$ BALANCING CHEMICAL EQUATIONS - PHET CP Chemistry Unit 5: Stoichiometry 2. What are the different ways that the simulation indicates when an equation is balanced? 3. For each balanced reaction, indicate the total number of molecules in the table below. Reaction Total Number of Molecules Reactant Side (Left) Product Side (Right) Make Ammonia Separate Water Combust Methane 4. For each balanced reaction, indicate the total number of atoms in the table below. Reaction Total Number of Atoms Reactant Side (Left) Product Side (Right) Make Ammonia Separate Water Combust Methane 5. Is the number of total molecules on the left side of a balanced equation always equal to the number of total molecules on the right side of the equation? Explain your answer. 6. Is the number of total atoms on the left side of a balanced equation always equal to the number of total atoms on the right side of the equation? 7. What is the same on the left and right side of a balanced equation? Explain your answer 8. The number placed in front of a formula is called a coefficient. The small number within a chemical formula is called a subscript. Why do we adjust coefficients when balancing chemical equations and not subscripts? BALANCING CHEMICAL EQUATIONS - PHET CP Chemistry Unit 5: Stoichiometry GAME Record your score for each of the levels in the balancing game. Write down each equation you balance. - Each level will ask you to balance 5 different reactions. BE SURE TO WRITE THEM DOWN AS YOU GO. Hint: You cannot have a coefficient of 0. As a group, play level 1 of the balancing equation game. Write down the strategies your group uses to balance chemical equations. Each person should be in charge of balancing at least one equation, asking for help from the group as needed. As a group, write down the equations as you solve them. Level 1 / 10 Reaction 1: Reaction 2: Reaction 3: Reaction 4: Reaction 5: Start level 2 of the balancing equation game. Take turns in your group to balance the equations in the sim, using your strategies from Level 1, and adding new strategies as needed. Level 2 / 10 Reaction 1: Reaction 2: Reaction 3: Reaction 4: Reaction 5: / 10 BALANCING CHEMICAL EQUATIONS - PHET CP Chemistry Unit 5: Stoichiometry POST LAB: 1. Antoine Lavoisier discovered the law of conservation of mass, which states that in chemical reactions, mass is never lost or gained. On the atomic level, this means that we never gain or lose atoms of any particular element in a chemical reaction. In other words, in every chemical reaction, we must end with the same number of atoms of each element with which we started. a. After you have balanced a chemical equation, how do you check your work to prove that the number of atoms on the reactant side matches the number of atoms on the product side? 2. In the simulation, were you able to use noninteger numbers (like 1/2 or 0.43) for the coefficients in a balanced equation? Why do you think this is? a) Which of the following are coefficients you could use in a balanced equation? You may choose more than one or none at all. $\frac{1}{2}$ $\frac{3}{4}$ 1 2 6 9 b) If you were balancing an equation containing the O2 molecule, which of the following would be correct representations of O2 and its coefficient? You may choose more than one or none at all. $\frac{1}{2}$ O2 3O2 6O2 3O 5O3 3. Consider the equations below I. $2\text{SnO}_2 + 4\text{H}_2 \rightarrow 2\text{Sn} + 4\text{H}_2\text{O}$ II. $\text{SnO}_2 + 2\text{H}_2 \rightarrow \text{Sn} + 2\text{H}_2\text{O}$ A. Both equation I and II are balanced, but equation II is the correct way to write the balanced equation. Why? B. Can you divide equation II by another factor and still have it be correct? Why or why not? BALANCING CHEMICAL EQUATIONS - PHET CP Chemistry Unit 5: Stoichiometry CHALLENGE QUESTIONS: BALANCE THE EQUATIONS BELOW. The first one is done as an example. $\text{NaNO}_3 + \text{PbO} \rightarrow \text{Pb(NO}_3)_2 + \text{Na}_2\text{O}$ Na N O Pb REACTANTS 1 1 4 1 PRODUCTS 2 2 7 1 1. $\text{Ca}_3\text{P}_2 + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2 + \text{PH}_3$ 2. $\text{Fe}_2\text{O}_3 + \text{CO} \rightarrow \text{Fe} + \text{CO}_2$ 3. $\text{NH}_3 + \text{O}_2 \rightarrow \text{N}_2 + \text{H}_2\text{O}$ 4. $\text{FeS} + \text{O}_2 \rightarrow \text{Fe}_2\text{O}_3 + \text{SO}_2$ 5. $\text{C}_3\text{H}_6\text{O}_2 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$

