## **Instructional Unit Title: Chemical Reactions**

## High School – Chemistry

Science

The teacher may provide a variety of The teacher may present The teacher may engage the The teacher may provide opportunities (e.g., reaction students in using models (e.g., 3-D, examples (e.g., variable concrete interactive experiences demonstrations, word equations, digital, particulate diagram, ball and equations, analogies) discussions) so students can begin to (e.g., labs, card sort, stick) to explain conservation of demonstrating patterns that demonstrations) so students can recognize the significance of using correct chemical reactions follow so mass so students can begin explore the differences between symbols (naming and subscripts) in relation discerning relationships between students can use the patterns to chemical and physical changes. to writing and balancing chemical classify chemical reactions. reactants and products. equations representing reactions. The teacher may provide The teacher may lead activities that The teacher may introduce the topic The teacher may model simulations around single apply stoichiometry so students can of mole ratios so students can begin demonstrations of replacement, double replacement, understand the quantities of to recognize that the determination reaction types so students synthesis, decomposition, and can experience, observe, reactant and products necessary to of mole ratios can only be made combustion so students can predict achieve a balanced chemical and begin to analyze once a chemical equation is products from patterns and write chemical reactions. equation. balanced. balanced chemical equations. **PERFORMANCE ASSESSMENT:** A local battery company found using the product from the reaction of zinc metal and HCl increases battery life by 50%. The company has hired you to conduct an experiment to determine the (a) reaction type, (b) identity of the useful product, and (c) how much zinc is required to The teacher may facilitate make the 4.83 g of product needed per battery. laboratory investigations so students can gain practical experience with chemical reactions in order to Other information: There are two products in the reaction. One is not useful and will bubble away during collect and analyze data to the reaction. determine mole ratios (stoichiometric relationships). Your task: Generate a report for the company in which you answer the three (a-c) requirements given in the introduction. Your report must include the products of this reaction, a balanced equation, the type of

This unit was authored by a team of Colorado educators. The unit is intended to support teachers, schools, and districts as they make their own local decisions around the best instructional plans and practices for all students. To see the entire instructional unit sample with possible learning experiences, resources, differentiation, and assessments visit <u>http://www.cde.state.co.us/standardsandinstruction/instructionalunitsamples</u>.

reaction, and the use of stoichiometry to determine the amount of product necessary for one battery.

Colorado Teacher-Authored Instructional Unit Sample Storyboard