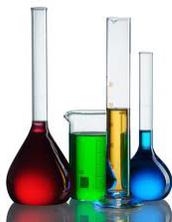




# Fisher Science Education

## Introducing AP<sup>®</sup> Chemistry Kits from Innovating Science

### Meets Updated 2013 AP<sup>®</sup> Standards!



Kit #	Description	List Price
S07310	<b>Effect of Concentration on Transmitted Light AP Lab #1</b> Students will be guided through an investigation to study food dyes and determine how the absorbance of light can be used to study color and determine concentrations of chemicals in solutions. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. This lab meets Big Idea 1, Investigation 1, and Primary Learning Objective 1.15.	\$25.90
S07311	<b>Beer's Law - Mass Percent of Copper in Brass AP Lab #2</b> Students will design a laboratory procedure to analyze the amount of copper in brass using a spectrophotometer. Students identify the correlation among wavelength, absorbance, and concentration for each of three possible ions that may be obtained from brass: copper, zinc, and iron. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. This lab meets Big Idea 1, Investigation 2, and Primary Learning Objective 1.16.	\$39.00
S07312	<b>What Makes Water Hard? AP Lab #3</b> Students will investigate the suitability of gravimetric analysis for determining the amount of water hardness in the form of calcium carbonate found in various water samples. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 1, Investigation 3, Primary Learning Objective 1.19.	\$32.50

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Kit #	Description	List Price
S07313	<b>How Much Acid in Fruit Juices and Soft Drinks AP Lab #4</b> Study how the concentration of acids in various consumer beverages may be determined by titration with sodium hydroxide. Students will determine the proper indicator to use in the titration of a weak acid. Students will create an experiment to calculate the molar concentration of acid in a beverage. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. This lab meets Big Idea 1, Investigation 4, Primary Learning Objective 1.20.	\$38.50
S07314	<b>Chromatography: Separation of a Mixture of Molecules AP Lab #5</b> Students collect data using different solvents to identify the optimal solvent for separation. They will then illustrate the intermolecular forces that are acting on the molecules in the separation. Students evaluate the chromatograph with different solvents and establish a connection between molecular structure and intermolecular attraction to the solvent. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 2, Investigation 5, Primary Learning Objective 2.10.	\$59.00
S07315	<b>What's in That Bottle? AP Lab #6</b> Students will identify unknown chemicals based on laboratory testing of their physical and chemical properties. Students will identify the 4 different kinds of bonds that exist in chemicals: ionic, polar covalent, nonpolar covalent and metallic. Students review the properties of each solid using various tests. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 2, Investigation 6, Primary Learning Objective 2.22.	\$67.00
S07316	<b>Green Chemistry: Purification of a Mixture AP Lab #7</b> First, students will design their own experiment to separate two substances using green chemistry principles. Students will also design and perform an experiment to quantitatively measure the weight percent of the mixture. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 3, Investigation 7, Primary Learning Objectives 3.5 and 3.3.	\$19.95
S07317	<b>Determination of Percent Hydrogen Peroxide by Titration AP Lab #8</b> Students will determine the actual concentration of the Hydrogen Peroxide in the bottle by titration and determine if it is lower than the value on the label. Hydrogen Peroxide will degrade over time, and students will determine how much it degrades. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 3, Investigation 8, Primary Learning Objective 3.9.	\$31.50



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Kit #	Description	List Price
S07318	<b>Examining the Composition of a Pain Reliever AP Lab #9</b> Students will test the solubility of each possible component of a commercially available pain reliever in an organic solvent, ethyl acetate, and in a basic aqueous solution of sodium bicarbonate. These results will help the student create a procedure that will be used to separate components in a mixture and determine percent composition. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 3, Investigation 9, Primary Learning Objective 3.10.	\$59.50
S07319	<b>How Long Will That Marble Statue Last? AP Lab #10</b> Students will observe and measure the evolution of carbon dioxide gas from the decomposition of calcium carbonate when mixed with an acid. Students will also create experiments to determine the rate of reaction with different concentrations of hydrochloric acid. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 4, Investigation 10, Primary Learning Objective 4.1.	\$72.50
S07320	<b>Rate Law of the Fading of a Dye Using Beer's Law AP Lab #11</b> Students will determine the rate law for the reaction of crystal violet and sodium hydroxide. Students will also prepare dilutions of stock crystal violet solutions to generate a Beer's law calibration curve. This lab will require students to integrate prior chemistry knowledge involving spectroscopy, Beer's law, solution dilution, calibration curves, and chemical kinetics. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 4, Investigation 11, Primary Learning Objective 4.2.	\$29.50
S07321	<b>Designing an Effective Hand Warmer AP Lab #12</b> Students study the various energy changes that occur with the formations of solutions for laboratory salts. From this data they will create the best and safest hand warmer. Students will determine the heat of solutions for each solid and analyze the cost and safety information with provided safety data sheet. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 5, Investigation 12, Primary Learning Objective 5.7.	\$37.50



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Kit #	Description	List Price
S07322	<b>Colors of the Rainbow: Le Chatelier's Principle AP Lab #13</b> Students will investigate Le Chatelier's principle and why it works. They will also investigate this principle by testing several systems at equilibrium and then selecting specific ones to produce the colors of the rainbow based on specific applications of Le Chatelier's principle. Students will then be challenged by selecting which reaction system to use for which color in producing the rainbow while trying to only use a given "stress" once. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 6, Investigation 13, Primary Learning Objective 6.9.	\$69.50
S07323	<b>Acid/Base Titration: Effect of Concentration and Structure on pH AP Lab #14</b> Students will conduct a series of acid-base titrations and determine the concentrations of two unknowns. Students will begin by finding the pH of a solution with pH paper. Next they will create a procedure to collect quantitative titration data using a buret and pH meter. Using titration data that they collected, they will determine the concentration of each unknown. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 6, Investigation 14, Primary Learning Objective 6.13.	\$42.50
S07324	<b>Preparation of Effective Household Products AP Lab #15</b> Many household products contain buffering chemicals. Students will design a procedure to determine the buffering agents that are in different household products such as foods, beverages and over the counter drugs. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 6, Investigation 15, Primary Learning Objective 6.20.	\$39.90
S07325	<b>Preparation of Effective Buffers AP Lab #16</b> Students will design a buffer that can maintain a pH within a narrow range when certain amounts amounts of acid and base are added. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. This lab meets Big Idea 6, Investigation 16, Primary Learning Objective 6.18.	\$49.50

**All Labs are for 30 Students Working in Pairs**