SCOPE & SEOUENCE
GR. 11 – CHEMISTRY 20

Student Task

GRADE 11: Chemistry 20
UNIT 2: Quantitative Relationships in Chemical Changes
TASK: Using Quantitative and Qualitative Analysis
PRODUCTIVITY TOOL: Word Processor and Spreadsheet
TIMELINE: 2 Classes
DIFFICULTY: Average

Students will determine the identity and concentration of an unknown solution using qualitative and quantitative analysis. They will report their findings using word processing and spreadsheet productivity tools.

ICT Outcomes

The learner will:

C1 4.4 communicate in a persuasive and engaging manner, through appropriate forms, such as speeches, letters, reports and multimedia presentations, applying information technologies for context, audience and purpose that extend and communicate understanding of complex issues

C6 4.1 investigate and solve problems of prediction, calculation and inference
4.2 investigate and solve problems of organization and manipulation of information
4.3 manipulate data by using charting and graphing technologies in order to test inferences and probabilities
4.4 generate new understandings of problematic situations by using some form of technology to facilitate the process
4.5 evaluate the appropriateness of the technology used to investigate or solve a problem

C7 4.1 use appropriate strategies to locate information to meet personal needs
4.2 analyze and synthesize information to determine patterns and links among ideas
4.3 use appropriate presentation software to demonstrate personal understandings

F1 4.2 solve mathematical and scientific problems by selecting appropriate technology to perform calculations and experiments
4.3 apply terminology appropriate to technology in all forms of communication

F2 4.8 analyze and assess the impact of technology on the global community

P1 4.1 continue to demonstrate the outcomes achieved in prior grades and course subjects

P2 4.1 manipulate and present data through the selection of appropriate tools, such as scientific instrumentation, calculators, databases and/or spreadsheets

P4 4.3 use integrated software effectively and efficiently to reproduce work that incorporates data, graphics and text

Curriculum Outcomes

GRADE 11: Chemistry 20
UNIT 2: Quantitative Relationships in Chemical Changes
TASK: Using Quantitative and Qualitative Analysis

Knowledge Objectives, Concept 1, Bullets 5-6

Students should be able to:

- use gravimetric, solutions and gas stoichiometry to predict quantities of reactants/products involved in chemical reactions
- use estimation and unit analysis in stoichiometric calculations

Knowledge Objectives, Concept 2, Bullets 2-4

- differentiate between quantitative and qualitative analysis
- use evidence from titration to determine the concentration of a solution
- use evidence from precipitation reactions to determine the concentration of ions in solutions, using gravimetric procedures

Skill Objectives, Concept 1, Bullet 1

- write and balance net ionic chemical equations to represent reactions taking place in an aqueous solution

Skills Objectives, Concept 2, Bullets 1-3

- use appropriate glassware and equipment to perform a titration experiment to determine the concentration of a solution
- perform and evaluate an experiment, based on a precipitation reaction, to determine the concentration of a solution
- design, perform and evaluate an experiment based on such methods as crystallization, filtration or titration, to determine the concentration of a solution

Thinking Processes, Bullets 1-4

- initiating and planning
- collecting and recording
- organizing and communicating
- analyzing data related to quantitative relationships in chemical *change*

Attitude Objectives, Bullets 1-6

- develop a positive attitude toward mathematical and scientific process skills
- appreciate the importance of careful laboratory techniques and precise calculations for obtaining accurate results
- develop confidence in their ability to reason mathematically
- value the role of technology, such as calculators and balances, in problem solving
- develop an awareness of the relationship between chemical principles and applications of chemistry
- appreciate the need for empirical evidence when interpreting observed phenomena