

# Chemistry

## INQUIRY

### Process Skills

- \_\_\_\_\_ Collect, organize and analyze data accurately and precisely, using appropriate instruments, equipment and units. **Chem-01**

## CONTENT

### Physical Science

#### Matter and Change

- \_\_\_\_\_ Compare and contrast physical and chemical properties and changes of matter. **Chem-02**

#### Scientific Measurement/Problem Solving

- \_\_\_\_\_ Solve problems using conversion factors and dimensional analysis. **Chem-03**

#### Atomic Structure

- \_\_\_\_\_ Investigate the atomic and nuclear structure of matter including historical atomic theories. **Chem-04**

#### Electrons in Atoms

- \_\_\_\_\_ Describe the quantum mechanical view of the atom and compare and contrast elements based on their configuration. **Chem-05**

#### Chemical Periodicity

- \_\_\_\_\_ Explain the historical development and organization of elements on the periodic table and identify trends. **Chem-06**

#### Bonding

- \_\_\_\_\_ Compare and contrast ionic and covalent bonds, and describe the shape and polarity of a molecule from the electron dot structure. **Chem-07**

#### Chemical Names and Formulas

- \_\_\_\_\_ Identify names and formulas for chemical compounds. **Chem-08**

#### Chemical Quantities

- \_\_\_\_\_ Convert between units (mass, volume and number of particles) with moles. **Chem-09**

- \_\_\_\_\_ Use the mole concept to calculate empirical formula and mass percent. **Chem-10**

#### Chemical Reactions

- \_\_\_\_\_ Complete and balance chemical reactions. **Chem-11**

#### Stoichiometry

- \_\_\_\_\_ Use balanced equations to solve stoichiometry problems. **Chem-12**

#### States of Matter

- \_\_\_\_\_ Use the kinetic theory to identify phase changes and interpret phase diagrams. **Chem-13**

#### Behavior of Gases

- \_\_\_\_\_ Describe the various gas laws and relationships between variables temperature, pressure and volume. **Chem-14**

- \_\_\_\_\_ Solve problems and explain practical applications of the gas laws. **Chem-15**

#### Solutions

- \_\_\_\_\_ Analyze how solubility is affected by changes in temperature and pressure. **Chem-16**

#### Thermochemistry

- \_\_\_\_\_ Explain the terms endo and exothermic, interpret graphical data and solve thermochemistry problems. **Chem-17**

#### Reaction Rates and Equilibrium

- \_\_\_\_\_ Explain factors that affect the rate of reaction and chemical equilibrium, predicting changes that will occur under various conditions **Chem-18**

#### Acids and Bases

- \_\_\_\_\_ Compare and contrast acids and bases including the concepts of pH and neutralization. **Chem-19**

#### Electrochemistry

- \_\_\_\_\_ Define the terms oxidation and reduction and identify what is oxidized and reduced in a chemical equation. **Chem-20**

## CONNECTIONS

### Science Practices

- \_\_\_\_\_ Demonstrate lab safety procedures and accept practices of same. **Chem-21**

- \_\_\_\_\_ Describe how scientific knowledge and explanations may change with new information over time. **Chem-22**

### S/T/S (Science, Technology and Society)

- \_\_\_\_\_ Explain how chemistry concepts are used in various occupations. **Chem-23**

- \_\_\_\_\_ Identify important contributions, both historical and current, that have been made by individuals and groups from various cultures to our understanding of chemistry. **Chem-24**

At the end of the school year, students will be able to...