# IKM-Manning Curriculum
# Science Standards / Benchmarks / Indicators
# April 2008

## Standards:

Students will demonstrate an understanding of unifying concepts and processes of science
Students will use the process of science inquiry
Students will demonstrate an understanding of the basic concepts and principles of physical science
Students will demonstrate an understanding of the basic concepts and principles of life science
Students will demonstrate an understanding of the basic concepts and principles of earth and space science
Students will demonstrate an understanding of connections and relationships between science and technology
Students will demonstrate an understanding of the relationship of science to personal, social, & environmental issues
Students will demonstrate an understanding of the history and nature of science

## Course Benchmarks:

C.1.1 Apply the vocabulary of chemistry (H,G,L,C,T)
C.3.1 Use symbols to construct reactants of, predict products of, and balance chemical reactions (H,V,G,MCGF,L,C)
C.3.2 Evaluate chemical reactions in a quantitative form (H,V,L,C,T)
C.3.3 Construct models of atoms and molecules (H, V, G, MCGF, L, C, T)
C.3.4 Predict properties of atoms and molecules based upon their molecular structure (H, V, G, MCGF, L, C)
C.3.5 Determine the quantitative effects of changing environmental conditions on the characteristics of gases (H, V, G, MCGF, L, C, T)

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## Chemistry

### C.1 Unifying Concepts and Processes

*C.1.1 Apply the vocabulary of chemistry*

C.1.1.A Use vocabulary words in unfamiliar situations
C.1.1.B Differentiate the prefixes used in the international system
C.1.1.C Classify forms of matter

### C.3 Physical Science Concepts

*C.3.1 Use symbols to construct reactants of, predict products of, and balance chemical reactions*

C.3.1.A Know the names and symbols of the elements
C.3.1.B Produce formulas for compounds, using the chemical symbols
C.3.1.C Predict products of chemical reactions
C.3.1.D Classify chemical reactions

*C.3.2 Evaluate chemical reactions in a quantitative form*

C.3.2.A Solve problems for moles of materials produced in reactions
C.3.2.B Calculate percent composition of compounds
C.3.2.C Predict empirical formulas of compounds
C.3.2.D Compare amount of reactants used to amounts of products produced using stoichiometry

*C.3.3 Construct models of atoms and molecules*

C.3.3.A Formulate Lewis structures of selected atoms and molecules

C.3.3.B Arrange wooden ball and stick models into three-dimensional models of molecules

C.3.3.C Build models that show electron placement in the orbital

*C.3.4 Predict properties of atoms and molecules based upon their molecular structure*

C.3.4.A Differentiate between metallic and nonmetallic atoms

C.3.4.B Determine relative electronegativities of the elements

C.3.4.C Arrange atoms according to the atomic radii, ionic radii, and ionization energies

*C.3.5 Determine the quantitative effects of changing environmental conditions on the characteristics of gases*

C.3.5.A Calculate the volume of a gas as the pressure and/or temperature changes

C.3.5.B Compare the diffusion rate of compounds with different masses

C.3.5.C Utilize the Ideal Gas Law to determine the characteristics of gases

*Coding for Infusion Topics covered in curriculum:

Higher Order Thinking Skills (H), Vocational/Career Education (V), Global Education (G), Multi-Cultural/Gender Fair (MCGF), Learning Skills (L), Communication Skills (C), Technology (T)