

Curriculum Unit Title

Algebra Connections in Chemistry and Physics

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KEY LEARNING, ENDURING UNDERSTANDING, ETC.

Equations, verbal descriptions, graphs, and tables provide insight into the relationship between quantities.
The Conservation Laws of Energy and Mass allow us to quantify chemical and nuclear reactions.

ESSENTIAL QUESTION(S) for the UNIT

How can the relationship between quantities best be represented?

CONCEPT A

Chemical Equations as Systems of Equations

CONCEPT B

Big and Small Numbers

CONCEPT C

Radioactive Decay, Half-Life and Exponential Equations

ESSENTIAL QUESTIONS A

How is the Law of Conservation of Mass used to balance chemical equations?

In what ways can a system of equations be solved, and why should one method be chosen over another?

ESSENTIAL QUESTIONS B

Scientific notation is a shorthand method for writing very large or very small numbers.

ESSENTIAL QUESTIONS C

How can we interpret functions that arise in applications in terms of the context?
How can we model an exponential relationship between two quantities?

VOCABULARY A

Atoms, molecules, elements, protons, neutrons, atomic mass, nucleus, reactants, products, coefficients, variables, system of equations, solution to a system of equations, substitution, matrix/matrices

VOCABULARY A

Scientific notation, base 10, Standard Model of Particle Physics: fermions, bosons, quarks, leptons, photon, electron, neutrinos, gluons, electron volt

VOCABULARY A

Isotopes, radioactive decay, half-life, regression equations, carbon-dating

ADDITIONAL INFORMATION/MATERIAL/TEXT/FILM/RESOURCES

Student Resources includes a list of articles and video resources to support this unit.