

## Physical Science 9 Curriculum

- I. Become acquainted with the basic principles of matter through laboratory experiences.
- A. Demonstrate a knowledge of making measurements.
1. Be able to use the SI system of measurement. **9-4**
  2. Be able to obtain significant figures when measuring. **9-3, 9-4**
  3. Be able to use significant figures when solving problems. **9-4**
  4. Be able to use various lab measuring instruments. **9-4, 9-3**
- B. Demonstrate a knowledge of volume and mass.
1. Be able to determine the volume of objects using the displacement of liquids. **9-2, 9-3, 9-4**
  2. Be familiar with the conservation of mass in physical and chemical changes. **9-7, 9-12**
- C. Demonstrate a knowledge of some characteristic properties of matter.
1. Be able to determine freezing, melting, and boiling points of various solids, liquids, and gases. **9-3, 9-4, 9-7, 9-12**
  2. Be able to recognize phase changes on time-temperature plots. **9-2, 9-4, 9-12**
  3. Be able to determine the density of regular and irregular solids. **9-2, 9-3, 9-4, 9-12**
  4. Be able to determine the density of liquids. **9-2, 9-3, 9-4, 9-12**
  5. Be able to determine the density of a gas using the displacement method. **9-2, 9-3, 9-4, 9-12**
  6. Be able to identify hydrogen, oxygen, and carbon dioxide gases using simple laboratory techniques. **9-1, 9-2, 9-3, 9-7, 9-12**
  7. Be able to recognize the relationship between the phases of matter and their densities. **9-1, 9-7, 9-12**
  8. Be able to interpret data when presented in the form of tables, graphs, and charts. **9-2, 9-4**
- D. Demonstrate a knowledge of solubility.
1. Be able to express the concentration of a solution using proper units. **9-2, 9-4**
  2. Be able to compare the concentration of saturated solutions. **9-2, 9-3, 9-12**
  3. Be familiar with the effect of temperature on the solubility of solids and gases. **9-2, 9-3, 9-4, 9-12**
  4. Be familiar with the solubility of some common solids when using solvents such as alcohol and acid. **9-3, 9-12**
- E. Demonstrate an ability to separate mixtures of matter.
1. Be able to separate a mixture of liquids by fractional distillation. **9-2, 9-3, 9-12**
  2. Be familiar with where fractional distillation is used in industry. **9-18, 9-19**
  3. Be able to separate a mixture of solids using differences in solubility. **9-3, 9-12**
  4. Be able to separate a mixture using paper chromatography. **9-3, 9-4, 9-12**
- F. Demonstrate a basic familiarity with chemical compounds.
1. Be familiar with how chemical compounds are proportions of elements. **9-2, 9-3**
  2. Be able to decompose compounds using heat and electricity. **9-3, 9-10, 9-12**
  3. Be able to synthesize compounds using chemical reactions. **9-3, 9-12**
- G. Be familiar with the difference between an element and a compound.
1. Be able to identify certain elements using the flame test method. **9-3, 9-12**
  2. Be able to separate an element from a compound using a displacement reaction. **9-1, 9-3, 9-12**
  3. Be familiar with some industrial separation of compounds. **9-18, 9-19**
  4. Be able to identify certain elements using spectroscopic analysis. **9-3, 9-4**
  5. Be familiar with some methods of identification of radioactive elements. **9-1, 9-4, 9-12, 9-19**
  6. Be familiar with the historical development of the Law of Constant Composition. **9-17, 9-19**
- H. Be able to communicate laboratory experiences, data, observations, and conclusions in written form.
1. Be able to construct an organized laboratory notebook. **9-1, 9-2**
  2. Be able to employ written communication skills in the reporting of laboratory data and events. **9-1, 9-17**
  2. Be able to collect and organize lab data into an appropriate format. **9-1, 9-2, 9-4**
  3. Be able to carry out simple data analysis and present a reasonable conclusion. **9-1, 9-2, 9-4**
  4. Be able to construct and interpret histograms and line graphs. **9-2, 9-4**
  5. Be able to compare and contrast an individual's set of data with class data. **9-2, 9-4**
  6. Be able to make and accurately record qualitative observations during an experiment. **9-1, 9-2, 9-3, 9-4**