

LINCOLN PUBLIC SCHOOLS  
Science Learning Expectations: Grade 8

**Strand:**

Physical Science

**Mass Standard  
PS5**

Recognize that there are more than 100 elements that combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.

See also: PS1, PS2, PS3, PS4, PS6, PS7, PS8, PS9 and PS10, and Inquiry Standards

**Big Ideas**

- Every substance on Earth has unique properties including density, boiling point, melting point and solubility that remain the same regardless of the substance's volume or mass.

**Key Outcomes**

- Students will demonstrate an understanding that **characteristic properties of matter such as density, boiling point, melting point and solubility can be used to identify different substances** by separating and analyzing the components of an unknown mixture.

**Essential Knowledge and Skills**

*Students will know and/or be able to:*

- Elements are organized by their physical and chemical properties in the Periodic Table.
- All compounds can be described using a chemical formula.
- Explain the difference between a mixture and a pure substance.
- Measure mass and volume and calculate the density of substances.
- Boiling/melting point is the unique temperature at which a substance changes state.
- Use different techniques (evaporation, filtration, distillation) to separate mixtures of solids, liquids and gases.
- Plot the temperature versus time for the boiling of a liquid and identify the boiling point of the liquid as the plateau on the graph.
- Conclude that mass remains constant in a closed system.