

Drawing from:

<http://www.cde.ca.gov/ci/sc/cf/documents/scienceframework.pdf>

Kindergarten

Standard Set 1 Physical Sciences

1. Properties of materials can be observed, measured, and predicted. As a basis for understanding this concept:

a. *Students know* objects can be described in terms of the materials they are made of (e.g., clay, cloth, paper) and their physical properties (e.g., color, size, **shape, weight, texture, flexibility,** attraction to magnets, floating, sinking).

1. b. *Students know* water can be a liquid or a solid and can be made to **change back and forth** from one form to the other.

Standard Set 3

Earth Sci

3. b. *Students know* changes in **weather occur from day to day and across seasons, affecting Earth and its inhabitants.**

3. c. *Students know* how to identify resources from Earth that are used in everyday life and understand that **many resources can be conserved.**

Standard Set 4

Investigation and Experimentation

4. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:

e. **Communicate observations orally and through drawings.**

1st Grade

Standard Set 1 Physical Sciences

1. Materials come in different forms (states), including solids, liquids, and gases. As a basis for understanding this concept: a. *Students know* solids, liquids, and gases have different properties.

1. **b. Students know the properties of substances can change when the substances are mixed, cooled, or heated**

Standard Set 2 Life Sciences

2. Plants and animals meet their needs in different ways. As a basis for understanding this concept:

2. **b. Students know both plants and animals need water, animals need food, and plants need light.**
3. **e. Students know roots are associated with the intake of water and soil nutrients and green leaves are associated with making food from sunlight.**

Standard Set 3 Earth Sciences

3. Weather can be observed, measured, and described. As a basis for understanding this concept:

a. Students know how to use simple tools (e.g., thermometer, wind vane) to measure weather conditions and record changes from day to day and across the seasons.

b. Students know that the weather changes from day to day but that trends in temperature or rain (or snow) tend to be predictable during a season.

4. **c. Students know the sun warms the land, air, and water.**

Standard Set 4 Investigation and Experimentation

4. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:

- a. **Draw pictures** that portray some features of the thing being described.
- b. **Record observations** and data with pictures, numbers, or written statements.
- c. Record observations on a **bar graph**.
- d. **Describe the relative position of objects** by using two references (e.g., above and next to, below and left of).
- e. **Make new observations when discrepancies exist between two descriptions of the same object or phenomenon.**

2nd Grade

Standard Set 1 Physical Sciences

1. **g.** *Students know* sound is made by vibrating objects and can be described by its pitch and volume.

Standard Set 2 Life Sciences

2. **e.** *Students know* **light, gravity, touch, or environmental stress can affect the germination, growth, and development of plants.**

Standard Set 3 Earth Sciences

Standard Set 4 Investigation and Experimentation

4. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:

- a.** Make predictions based on observed patterns and not random guessing.
- b.** Measure length, weight, temperature, and liquid volume with appropriate tools and express those measurements in standard metric system units.
- c.** Compare and sort common objects according to two or more physical attributes (e.g., color, shape, texture, size, weight).
- d.** Write or draw descriptions of a sequence of steps, events, and observations.
- e.** Construct bar graphs to record data, using appropriately labeled axes.
- f.** Use magnifiers or microscopes to observe and draw descriptions of small objects or small features of objects.
- g.** Follow oral instructions for a scientific investigation.

3rd Grade (Energy and Matter)

Standard Set 1 Physical Sciences

1. **Energy and matter have multiple forms and can be changed from one form to another. As a basis for understanding this concept:**
 - a.** *Students know* **energy comes from the Sun to Earth in the form of light.**
 1. **b.** *Students know* sources of **stored energy take many forms, such as food, fuel, and batteries.**
 1. **c.** *Students know* **machines and living things convert stored energy to motion and heat.**

1. d. *Students know* energy can be carried from one place to another by waves, such as water waves and sound waves, by electric current, and by moving objects.
1. e. *Students know* matter has three forms: solid, liquid, and gas.
1. f. *Students know* evaporation and melting are changes that occur when the objects are heated.
1. g. *Students know* that when two or more substances are combined, a new substance may be formed with properties that are different from those of the original materials.
1. h. *Students know* all matter is made of small particles called atoms, too small to see with the naked eye.
1. i. *Students know* people once thought that earth, wind, fire, and water were the basic elements that made up all matter. Science experiments show that there are more than 100 different types of atoms, which are presented on the periodic table of the elements.

Standard Set 2 Physical Sciences (Light)

2. Light has a source and travels in a direction. As a basis for understanding this concept:
 - a. *Students know* sunlight can be blocked to create shadows.
 - b. *Students know* light is reflected from mirrors and other surfaces.
 - c. *Students know* the color of light striking an object affects the way the object is seen.
 - d. *Students know* an object is seen when light traveling from the object enters the eye.

Standard Set 3 Life Sciences

3. c. *Students know* living things cause changes in the environment in which they live: some of these changes are detrimental to the organism or other organisms, and some are beneficial.
4. d. *Students know* when the environment changes, some plants and animals survive and reproduce; others die or move to new locations.

Standard Set 4 Earth Sciences

4. Objects in the sky move in regular and predictable patterns. As a basis for understanding this concept:

b. *Students know* the way in which the **Moon's appearance changes** during the four-week lunar cycle.

4. d. *Students know* that **Earth is one of several planets that orbit the Sun and that the Moon orbits Earth.**

Standard Set 5 Investigation and Experimentation

5. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:

a. **Repeat observations to improve accuracy and know that the results of similar scientific investigations seldom turn out exactly the same because of differences in the things being investigated, methods being used, or uncertainty in the observation.**

b. **Differentiate evidence from opinion and know that scientists do not rely on claims or conclusions unless they are backed by observations that can be confirmed.**

c. **Use numerical data in describing and comparing objects, events, and measurements.**

d. **Predict the outcome of a simple investigation and compare the result with the prediction.**

e. **Collect data in an investigation and analyze those data to develop a logical conclusion.**

Standard Set 1 Physical Sciences

Standard Set 2 Life Sciences

Standard Set 3 Earth Sciences

Standard Set 4 Investigation and Experimentation