



# Fifth Grade Science

## Essential Standards Extended Guide

### FIFTH GRADE SCIENCE

#### Background information about this document:

In response to requests from schools and districts for guidance on essential standards, committees of educators from around Idaho collaborated in the summer of 2024 to categorize science standards into two groups:

- **Essential standards** are explicitly taught, assessed multiple times, and receive targeted interventions for students who have not yet reached proficiency.
- **Supporting standards** are taught to reinforce essential standards and may or may not be formally assessed.

This guidance helps LEAs prioritize the most critical standards, recognizing that not all standards are of equal importance. This document serves as a resource—not a mandate—to assist local efforts. Importantly, this work did not remove or revise any of the adopted Idaho Content Standards and is intended to refocus time and effort.

## Physical Science

<p style="text-align: center;"><b>Essential Standards</b></p> <p style="text-align: center;">Standards are to be explicitly taught, assessed more than once, and intervened upon in this cluster of standards.</p>	<p style="text-align: center;"><b>Supporting Standards and Content</b></p> <p style="text-align: center;">Taught to support the learning of essential standards and may or may not be formally assessed.</p>
<p>5-PS-1.1 Develop a model to describe that matter is made of particles too small to be seen.</p>	<p>Matter of any type can be subdivided into particles that are too small to see, but even then, the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. (5-PS-1.1)</p>
<p>5-PS-1.2 Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.</p>	<p>The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. (5-PS-1.2)</p> <p>No matter what reaction or change in properties occurs, the total weight of the substances does not change. (Boundary: Mass and weight are not distinguished at this grade level.) (5-PS1.2)</p>
<p>5-PS-1.4 Conduct an Investigation to determine whether the mixing of two or more substances results in new substances.</p>	<p>When two or more different substances are mixed, a new substance with different properties may be formed. (5-PS-1.4)</p>
<p>5-PS-2.1 Support an argument that Earth’s gravitational force exerted on objects is directed downward.</p>	<p>The gravitational force of Earth acting on an object near Earth’s surface pulls that object toward the planet’s center. (5-PS-2.1)</p>
<p>5-PS-3.1 Use models to describe that energy in animals’ food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the Sun.</p>	<p>The energy released from food was once energy from the Sun. The energy was captured by plants in the chemical process that forms plant matter (from air and water). (5-PS-3.1, 5-LS1.1)</p> <p>Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (5-PS-3.1)</p>
	<p><b>Supporting Standard:</b></p> <p>5-PS-1.3 Make observations and measurements to identify materials based on their properties.</p>

### Further explanation:

1. Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.
2. Examples of reactions or changes could include phase changes, dissolving, and mixing that form new substances.

3. “Downward” is a local description of the direction that points toward the center of the spherical Earth. Examples could include reasoning that since an object that is initially stationary when held moves downward when it is released, there must be a force (gravity) acting on the object that pulls the object toward the center of Earth.
4. Examples of models could include diagrams and flow charts.

**Assessment limits:**

1. Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.
2. Assessment does not include distinguishing mass and weight.
3. Assessment does not include mathematical representation of gravitational force.

## Life Science

<p style="text-align: center;"><b>Essential Standards</b></p> <p style="text-align: center;">Standards are to be explicitly taught, assessed more than once, and intervened upon in this cluster of standards.</p>	<p style="text-align: center;"><b>Supporting Standards and Content</b></p> <p style="text-align: center;">Taught to support the learning of essential standards and may or may not be formally assessed.</p>
<p>5-LS-1.1 Support an argument that plants get what they need for growth chiefly from air, water, and energy from the Sun.</p>	<p>Plants acquire their material for growth chiefly from air and water. (5-LS-1.1) The energy released from food was once energy from the Sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5-LS-1.1, 5-PS-3.1)</p>
<p>5-LS-2.1 Analyze and interpret data from fossils to provide evidence of the types of organisms and the environments that existed long ago and compare those to living organisms and their environments.</p>	<p>Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (5-LS-2.1) Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. (5-LS-2.1)</p>
<p>5-LS-2.2 Construct an argument with evidence for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.</p>	<p>Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing (5-LS-2.2) Populations of animals are classified by their characteristics. (5-LS-2.2)</p>
<p>5-LS-2.3 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals living there may change.</p>	<p>When the environment changes in ways that affect a place’s physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (5-LS-2.3) Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (5-LS-2.3)</p>
<p>5-LS-2.4 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p>	<p>The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants and animals) and therefore operate as “decomposers.” Decomposition eventually restores</p>

<p style="text-align: center;"><b>Essential Standards</b></p> <p style="text-align: center;">Standards are to be explicitly taught, assessed more than once, and intervened upon in this cluster of standards.</p>	<p style="text-align: center;"><b>Supporting Standards and Content</b></p> <p style="text-align: center;">Taught to support the learning of essential standards and may or may not be formally assessed.</p>
	<p>(recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS-2.4)</p> <p>Matter cycles between the air and soil, and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (5-LS-2.4)</p>

**Further explanation:**

1. Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.
2. Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.
3. Examples of cause and effect relationships could be that plants that have larger thorns than other plants may be less likely to be eaten by predators, and animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.
4. Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.
5. Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.

**Assessment Limit:**

1. Assessment does not include identification of specific fossils or present plants and animals. Assessment is limited to major fossil types and relative ages.
2. Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.
3. Assessment does not include molecular explanations.

## Earth and Space Science

<p style="text-align: center;"><b>Essential Standards</b></p> <p style="text-align: center;">Standards are to be explicitly taught, assessed more than once, and intervened upon in this cluster of standards.</p>	<p style="text-align: center;"><b>Supporting Standards and Content</b></p> <p style="text-align: center;">Taught to support the learning of essential standards and may or may not be formally assessed.</p>
<p>5-ESS-1.1 Support an argument that differences in the apparent brightness of the Sun compared to other stars is due to their relative distances from the Earth.</p>	<p>The Sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth. (5-ESS-1.1)</p>
<p>5-ESS-1.2 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</p>	<p>The orbits of Earth around the Sun and of the Moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the Sun, Moon, and stars at different times of the day, month, and year. (5-ESS1.2)</p>
<p>5-ESS-2.1: Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.</p>	<p>Earth’s major systems are the geosphere (solid and molten rock, soil, and sediments); the hydrosphere (water and ice); the atmosphere (air); and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth’s surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS-2.1)</p>
<p>5-ESS-2.2 Describe and Graph the relative amounts of fresh and salt water in various reservoirs, to interpret and analyze the distribution of water on Earth.</p>	<p>Nearly all of Earth’s available water is in the ocean. Most freshwater is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. (5-ESS2.2)</p>
<p>5-ESS-3.1 Obtain and communicate information about ways communities protect Earth’s resources and environments using scientific ideas.</p>	<p>Human activities in agriculture, industry, and everyday life have effects on the land, vegetation, streams, ocean, air, and even outer space. Individuals and communities can often mitigate these effects through innovation and technology. (5-ESS-3.1)</p>

### Further explanation:

1. Examples of patterns could include the position and motion of Earth with respect to the Sun and selected stars that are visible only in particular months.

2. Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.

**Assessment Limit:**

1. Assessment is limited to relative distances, not sizes, of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, or stage).
2. Assessment does not include causes of seasons.
3. Assessment is limited to the interactions of two systems at a time.
4. Assessment is limited to oceans, lakes, rivers, glaciers, groundwater, and polar ice caps, and does not include the atmosphere.

---

**For Questions Contact**

Content and Curriculum

Idaho Department of Education

650 W State Street, Boise, ID 83702

208 332 6800 | [www.sde.idaho.gov](http://www.sde.idaho.gov)