A Guide to the Colorado **Academic Standards**





Sixth Grade

Working Together

To support families and teachers in realizing the goals of the Colorado Academic Standards, this guide provides an overview of the learning expectations for sixth grade science and offers some possible learning experiences students may engage in during this school year.

Why Standards?

Created by Coloradans for Colorado students, the Colorado Academic Standards provide a grade-by-grade road map to help ensure students are ultimately successful in college, careers, and life. The standards aim to improve what students learn and how they learn in ten content areas, emphasizing critical-thinking, creativity, problem solving, collaboration, and communication as important life skills in the 21st century.

Science for Middle Schools (6-8)

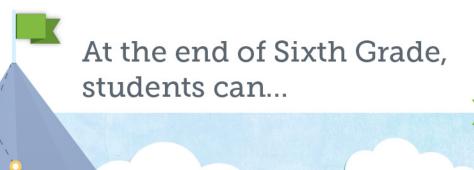
The science standards at the middle school and high school grades build upon the foundation for students to work as scientists by asking testable questions, collecting and analyzing different types of evidence, and by providing rationale for their interpretations through reasoning and/or argumentation. Mastery of these standards will result in students deepening their understanding of science through an application and development of scientific knowledge to the solution of practical problems. Students will experience all three "strands" of the science standards during their secondary years: physical science, life science, and earth science.

Where can I learn more?

- Contact your school district regarding local decisions related to standards, curriculum, resources, and instruction.
- Colorado Academic Standards Booklets: http://www.cde.state.co.us/standardsandinstruction/GradeLevelBooks.asp
- Joanna Bruno, Science Content Specialist at 303-919-3907, Bruno j@cde.state.co.us









Science

Sixth Grade



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Science Learning Expectations for Sixth Grade

Physical Science

Recognize that all matter is made of atoms that may stick together as molecules or be packed together in large arrangements; identify the unique properties of elements; distinguish physical characteristics and changes of solid, liquid, and gas states; distinguish between mass, weight, volume, and density and explain relationships among them.

Life Science

Explain how changes in environmental conditions can affect the survival of individual organisms, populations, and entire species; describe ways that organisms interact with each other and their environment to create an ecosystem.

Earth Science

Recognize that relationships exist between Earth's structure and constructive and destructive forces (earthquakes, landslides); analyze how water on Earth is distributed and circulated (oceans, glaciers, rivers, ground water, and the atmosphere); identify the role that Earth's natural resources provide for human society's physical needs; distinguish non-renewable and renewable natural resources.

Throughout the Sixth Grade, you may find students...

 Using a model of matter to illustrate characteristics of different substances (particle model); explaining the similarities and differences between elements and compounds; explaining how the arrangement and motion of particles in a substance determine its state (liquid, solid, gas); describing the relationship between states and temperature.

- Explaining that the mass of an object does not change, but its weight changes due to gravitational forces; predicting how changes in acceleration due to gravity affect the weight of an object; measuring mass and volume to calculate density.
- Interpreting and analyzing data about changes in environmental conditions and populations that describe why a specific population might be increasing or decreasing; modeling balance in an ecosystem.
- Developing, communicating, and justifying an evidence-based explanation using various resources (text, internet, computer simulations); designing a food web diagram to show the flow of energy through an ecosystem and compare and contrast that flow with the cycling of matter in ecosystems.
- Using various resources to help explain the formation of Earth's surface features and the connection to constructive and destructive forces.
- Gathering and analyzing data from various resources and investigations to account for local and world-wide water circulation and distribution patterns including where water goes after it is used; identifying problems, and proposing solutions related to local and global water quality (pollution), circulation, and distribution.
- Researching data and information about types of natural resources (renewable and nonrenewable), their availability, and use in communities; using information to determine the advantages and disadvantages of using fossil fuels and alternative energy sources.