

**NEXT GENERATION SCIENCE STANDARDS
TOPICS BY GRADE LEVEL
GRADE 4**

ENERGY

- Relating the speed of an object to the energy of that object.
- Energy can be transferred from place to place by sound, light, heat and electric currents.
- The changes in energy that occur when objects collide.
- That converts energy from one form to another.
- Energy and fuels are derived from natural resources and their uses affect the environment.

WAVES

- Of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.
- Multiple solutions that use patterns to transfer information.

STRUCTURE, FUNCTION AND INFORMATION PROCESSING

- That light reflecting from objects and entering the eye allows objects to be seen.
- That plants and animals have internal and external structures that function to support survival, growth, behavior and reproduction.
- Animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

EARTH'S SYSTEMS: PROCESSES THAT SHAPE THE EARTH

- From patterns in rock formations and fossils in rock layers for changes in a landscape over time to support an explanation for changes in a landscape over time.
- The effects of weathering or the rate of erosion by water, ice, wind or vegetation.
- From maps to describe patterns of Earth's features.
- Multiple solutions to reduce the impacts of natural Earth processes on humans.

ENGINEERING DESIGN

- Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time or cost.
- Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

**Go to www.nextgenscience.org for Clarification Statements, Science and Engineering Practices, Disciplinary Core Ideas and Cross Cutting Concepts for each topic listed above. You will also find all of the connections to the Common Core for both ELA/Literacy and Mathematics.

