

## EARTH SCIENCE

### Members of Our Solar System

Our Solar System and the Inner Planets  
Outer Planets of Solar System  
Pluto and Dwarf Planets  
Origin of Solar System  
Sun  
Comets  
Meteors and Asteroids  
Comets, Meteors and Asteroids  
Space Exploration

### Earth's Air

Atmospheric Composition  
Atmospheric Structure  
Cloud Formation  
Cloud Types  
Global Winds

### Earth's Weather

Winds and Weather  
Weather Patterns  
Predicting Weather  
Severe Weather

### Earth's Water

The Hydrological Cycle  
Groundwater Movement  
Water Table  
Springs and Geysers  
Caves and Sinkholes  
River Development  
Watersheds  
River Systems

### Earth's Internal Processes

Basic Structure of Earth  
Earth Features Caused by Plate Movement  
Plate Tectonics  
Continental Drift  
Causes of Volcanoes  
Volcanoes as Systems  
Volcanoes and Igneous Rock  
Impact of Volcanoes on Humans  
Causes of Earthquakes  
Impact of Earthquakes on Humans

### Earth's Surface

Uses of Minerals  
Rock Cycle  
Metamorphism  
Weathering  
Effects of Weathering  
Soil Layers  
Landforms and Erosion  
Effects of Erosion

### Earth, Sun and Moon

Earth and Its Motion  
Earth's Rotation and Revolution  
Earth's Tilt and Seasons

Seasons  
The Moon  
The Lunar Cycle  
Lunar Geography  
Solar Eclipse  
Lunar Eclipse

### Humans and the Environment

Water as a Resource  
Human Impact on Water  
Water Management  
Air Pollution  
Causes and Effects of Air Pollution  
Reducing Air Pollution and Its Effects  
Population Growth and Earth's Resources  
Sustainability  
Resource Management

### Earth's Energy Resources

The Sun is the Major Source of Energy for Earth  
Solar Energy  
Wind and Solar Energy Technologies  
Biomass  
Nuclear Energy  
Fossil Fuels  
Oil Composition and Uses  
Natural Gas Composition and Uses  
Coal Composition and Uses

### Stars and Galaxies

What Stars Are  
Properties of Stars  
The Milky Way Galaxy  
Other Galaxies  
Light Years and Distance  
Origin of the Universe Theories

### Earth's Oceans

Ocean Water Composition  
Waves  
Tides  
Currents  
Convection Currents  
Climate Factors  
River Mouth Morphology  
Habitats

## LIFE SCIENCE

### Living Organisms

Levels of Structure  
Structure in Plants and Animals  
Structure and Function Are Related  
Structure and Function in Plants  
Organisms and Internal Stimuli  
Responses to Internal Stimuli  
Organisms and External Stimuli  
Involuntary Responses to External Stimuli  
Chemical Composition  
Carbon Chemistry

Molecules in Living Things

### Cell Biology

Cell Basics  
The Functions of Cells  
Important Cell Organelles  
Photosynthesis  
Plant Cell Structures  
Animal Cell Function  
Comparing Plant and Animal Cells  
The Cell Cycle  
The Cell Nucleus  
Mitosis  
Single-celled and Multi-celled Organisms  
Development in Multicellular Organisms  
Processes in Development

### Health

Physical Fitness  
Physical Fitness Benefits  
Safety  
Natural Hazards  
Biological Hazards  
Risks of Tobacco  
Alcohol and Drugs  
Nutrition  
Nutrition Guidelines  
Reproductive Health

### Ecosystems

Populations  
Abiotic and Biotic Resources  
Energy Flow  
Photosynthesis  
Roles of Organisms  
Energy Loss  
Ecological Niches  
Interactions in Ecosystems  
Succession  
Population Size  
Overpopulation  
Sudden Changes in Ecosystems  
Human Population  
Life's Interaction with Earth  
Carbon Cycle  
Nitrogen Cycle

### Reproduction

Sexual and Asexual Reproduction  
Life Cycles  
Sexual Reproduction  
Sexual Reproduction and Variation  
Sexual Reproduction in Plants  
Sexual Reproduction in Humans  
The Placenta in Humans

### The Human Body

Organ Systems  
More Organ Systems  
Organ System Interactions  
Stable Internal Environment

Feedback in Living Systems  
Muscular and Skeletal System  
A Closer Look at Muscles  
The Eye  
The Ear  
Disease  
The Immune System  
The Heart  
The Circulatory System  
Excretory System  
The Respiratory System  
Gas Exchange

### Heredity

Traits  
Genetic Material  
Genes  
DNA Structure  
Chromosomes (Karyotype)  
Homologous Chromosomes  
Dominant and Recessive Genes  
Genetic Crosses (Punnett Square)  
Genetic Variation  
Genetics and Environment  
Genes and Behavior

### Diversity of Life

Darwin  
Adaptation and Natural Selection  
Examples of Natural Selection  
Artificial Selection (Selective Breeding)  
Fossil Evidence  
Similarities of Organisms  
Classification  
DNA and Classification  
Linnaeus

## PHYSICAL SCIENCE

### Motion

Location  
Motion  
Graphing Motion  
Velocity and Acceleration

### Physical Properties of Matter

Matter  
Classifying Minerals  
Hardness  
Density  
Buoyancy  
Thermal Conductivity  
Electrical Conductivity  
Melting and Boiling Points  
States of Matter  
Changes in State

### Energy

Types of Energy  
Potential and Kinetic Energy  
Conduction, Convection, and Radiation  
How Heat Is Transferred  
Specific Heat  
Electricity  
Waves  
Technology of Energy Transformation  
Two Methods of Energy Transformation  
Efficiency of Energy Transformation  
Efficiency Comparisons

### Force

Force Basics  
Reacting to Force  
Introduction to Gravity  
Gravity in Space  
Gravity and Tides  
Friction  
Elastic Forces  
Unbalanced Forces and Motion  
Balanced and Unbalanced Forces  
Types of Forces  
Newton's Laws of Motion  
Work  
Simple Machines  
Machines in the Body  
Pressure

### Structure of Matter and Periodic Table

Structure of the Atom  
Protons, Neutrons, and Electrons  
Discovery of Atomic Structure  
Compounds  
Development of Periodic Table  
Periodic Table  
Grouping Elements by Properties  
Valence Electrons  
Bonding

### Chemical Properties and Reactions

Physical Changes  
Chemical Reactions and Physical Changes  
Forming Compounds  
Chemical Properties and New Materials  
Conservation of Mass  
Compounds and Chemical Reactions  
Chemical Reactions and Heat Transfer  
Chemical Systems  
The pH scale  
Acids, Neutrals, and Bases

### Light

Basics of Light  
Visible Light  
Path of Light  
Reflection  
Absorption and Scattering  
Seeing Objects: Reflection and Scattering  
Colors of Objects  
Refraction  
Lenses

## GENERAL SCIENCE

### Scientific Method

Scientific Method  
Hypothesizing  
Testing Hypotheses  
Planning an Experiment  
Collecting Data  
Communication of Results

### Earth Science and the Scientific Community

Earth Science Activities  
Who Are the Earth Scientists?  
Earth Science Skills  
Impact of Research  
Societal Challenges and Earth Science  
Societal Priorities and Earth Science  
Risk  
Risk Analysis  
Contributions of Earth Science  
Earth Science Discoveries

### Experimentation

Safety Techniques  
Some Useful Tools  
Measurements  
Tools of Experimentation  
Create and Use Charts and Graphs  
Create and Use Tables  
Measures of Central Tendency  
Summarizing Data  
Collecting, Organizing, and Using Data  
Direct Evidence  
Indirect Evidence  
Cause and Effect  
Sources of Error  
Communication of Results

### Life Sciences and the Scientific Community

Life Science Activities  
Who Are the Life Scientists?  
Life Science Skills  
Impact of Research  
Societal Challenges and Life Science  
Societal Priorities and Life Science  
Risk  
Risk Analysis  
Contributions of Life Science  
Life Science Discoveries

### Other Ways to Understand Science

Using Maps  
Modeling  
Diagrams  
Mathematical Relationships  
Linear and Nonlinear Graphs

### Physical Sciences and the Scientific Community

Physical Science Activities  
Who Are the Physical Scientists?  
Physical Science Skills  
Impact of Research  
Societal Challenges and Physical Science  
Societal Priorities and Physical Science  
Risk  
Risk Analysis  
Contributions of Physical Science  
Physical Science Discoveries