

Sixth Grade Science

Here is a list of all of the Science Skills students learn in Sixth Grade.

A. Science practices and tools

1. Identify steps of the scientific method
2. Identify laboratory tools

B. Designing experiments

1. Identify control and experimental groups
2. Identify independent and dependent variables
3. Identify the experimental question
4. Identify questions that can be investigated with a set of materials
5. Understand an experimental protocol about plant growth
6. Understand an experimental protocol about diffusion
7. Understand an experimental protocol about evaporation

C. Engineering practices

1. Identify parts of the engineering-design process
2. Evaluate tests of engineering-design solutions
3. Use data from tests to compare engineering-design solutions
4. Explore the engineering-design process: going to the Moon!

D. Matter and mass

1. Calculate density
2. Understand conservation of matter using graphs

E. Atoms and molecules

1. What are atoms and chemical elements?
2. How are substances represented by chemical formulas and models?
3. Match chemical formulas to ball-and-stick models
4. Complete chemical formulas for ball-and-stick models
5. Describe the atomic composition of molecules
6. Classify elementary substances and compounds using chemical formulas
7. Identify elementary substances and compounds using chemical formulas
8. Sort elementary substances and compounds using chemical formulas
9. Classify elementary substances and compounds using models
10. Identify elementary substances and compounds using models
11. Sort elementary substances and compounds using models

F. Chemical reactions

1. Identify reactants and products
2. Count atoms and molecules in chemical reactions
3. Calculate amounts of reactants or products in chemical reactions
4. Describe energy changes in chemical reactions
5. Compare physical and chemical changes
6. Explore chemical structure and properties: soapmaking
7. Explore chemical structure and properties: food flavors

G. Velocity, acceleration, and forces

1. Calculate speed from time and distance
2. Calculate distance from speed and time
3. Calculate time from speed and distance
4. Calculate speed, distance, and time I
5. Calculate speed, distance, and time II
6. Identify whether objects are accelerating
7. How does mass affect force and acceleration?
8. Predict forces using Newton's third law
9. Balanced and unbalanced forces

H. Kinetic and potential energy

1. Identify changes in gravitational potential energy
2. Use tables and graphs to identify patterns about kinetic energy
3. Explore energy transformations: roller coaster ride
4. Explore energy transformations: bike ride

I. Thermal energy

1. Predict heat flow and temperature changes
2. How are temperature and mass related to thermal energy?
3. Compare thermal energy transfers

J. Particle motion and energy

1. How does particle motion affect temperature?
2. Particle motion and changes of state
3. How does particle motion affect gas pressure?
4. Identify how particle motion affects temperature and pressure

K. Waves

1. Compare amplitudes, wavelengths, and frequencies of waves
2. Compare energy of waves

L. Solutions

1. Compare concentrations of solutions
2. Diffusion across membranes

M. Classification and scientific names

1. Identify common and scientific names
2. Origins of scientific names
3. Use scientific names to classify organisms

N. Biochemistry

1. Structure and function: carbohydrates, lipids, proteins, and nucleic acids
2. Understanding the chemistry of cellular respiration

O. Cells

1. Understanding cells
2. Identify functions of plant cell parts
3. Identify functions of animal cell parts
4. Plant cell diagrams: label parts
5. Animal cell diagrams: label parts
6. Compare cells and cell parts

P. Anatomy and physiology

1. Organization in the human body: the heart and the circulatory system
2. Science literacy: how does the nervous system produce phantom pain?

Q. Genes to traits

1. Inherited and acquired traits: use evidence to support a statement
2. Genetics vocabulary: genotype and phenotype
3. Genetics vocabulary: dominant and recessive
4. Genetic variation in sexual reproduction
5. Complete and interpret Punnett squares
6. Use Punnett squares to calculate ratios of offspring types
7. Genes, proteins, and traits: understanding the genetic code
8. Describe the effects of gene mutations on organisms
9. How do genes and the environment affect plant growth?

R. Adaptations and natural selection

1. How can animal behaviors affect reproductive success? Identify evidence to support a claim
2. Introduction to natural selection
3. Calculate the percentages of traits in a population
4. Calculate the averages of traits in a population
5. Construct explanations of natural selection

S. Fossils

1. Compare ages of fossils in a rock sequence

T. Plant reproduction

1. Flowering plant and conifer life cycles
2. Moss and fern life cycles

U. Photosynthesis

1. How do plants use and change energy?
2. Identify the photosynthetic organism

V. Ecosystems

1. Describe populations, communities, and ecosystems
2. Identify ecosystems
3. Describe ecosystems

W. Ecological interactions

1. How does matter move in food chains?
2. Interpret food webs I
3. Interpret food webs II
4. Use food chains to predict changes in populations
5. Classify symbiotic relationships
6. Investigate primary succession on a volcanic island

X. Conservation

1. Coral reef biodiversity and human uses: explore a problem
2. Coral reef biodiversity and human uses: evaluate solutions

Y. Natural resources and human impacts

1. Evaluate claims about natural resource use: groundwater
2. Evaluate claims about natural resource use: fossil fuels

Z. Rocks and minerals

1. Identify rocks and minerals
2. Classify rocks as igneous, sedimentary, or metamorphic
3. Label parts of rock cycle diagrams
4. Select parts of rock cycle diagrams

AA. Plate tectonics

1. Label Earth layers
2. Label Earth features at tectonic plate boundaries
3. Describe tectonic plate boundaries around the world

BB. Topographic maps

1. Select parts of a topographic map

CC. Water cycle

1. Label parts of water cycle diagrams
2. Select parts of water cycle diagrams

DD. Weather and climate

1. Use data to describe climates
2. Explore air masses
3. Identify and compare air masses
4. How do air masses form?

EE.Climate change

1. The carbon cycle
2. The greenhouse effect
3. Use data to explain climate change

FF.Natural hazards

1. Analyze natural hazard maps

GG.Astronomy

1. Analyze models of the Earth-Sun-Moon system
2. Identify phases of the Moon
3. What causes the seasons on Earth?
4. Analyze data to compare properties of planets

HH.Units and measurement

1. Choose customary units of distance, mass, and volume
2. Choose metric units of distance, mass, and volume
3. Estimate temperatures
4. Abbreviate length, speed, and acceleration units
5. Abbreviate temperature, mass, and volume units
6. Abbreviate force, energy, and electricity units