

MIDDLE SCHOOL
SCIENCE
SCOPE AND SEQUENCE

SIXTH SCIENCE

SEVENTH SCIENCE

EIGHTH SCIENCE

Science, Grade 6

First Six Weeks :: The student is expected to...

- demonstrate safe practices during field and laboratory investigations.[1.A]
- plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting and using equipment and technology.[2.A]
- collect data by observing and measuring.[2.B]
- analyze and interpret information to construct reasonable explanations from direct and indirect evidence.[2.C]
- communicate valid conclusions.[2.D]
- construct graphs, tables, maps, and charts using tools including computers to organize, examine, and evaluate data.[2.E]
- draw inferences based on data related to promotional materials for products and services.[3.B]
- collect, analyze, and record information using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, timing devices, hot plates, test tubes, safety goggles, spring scales, magnets, balances, microscopes, telescopes, thermometers, calculators, field equipment, compasses, computers, and computer probes.[4.A]
- identify patterns in collected information using percent, average, range, and frequency.[4.B]
- identify and describe a system that results from the combination of two or more systems such as in the solar system.[5.A]
- identify characteristics of objects in our solar system including the Sun, planets, meteorites, comets, asteroids, and moons.[13.A]
- describe types of equipment and transportation needed for space travel.[13.B]

Second Six Weeks :: The student is expected to...

- analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information.[3.A]
- connect Grade 6 science concepts with the history of science and contributions of scientists.[3.E]
- identify and describe the changes in position, direction of motion, and speed of an object when acted upon by force.[6.A]
- demonstrate that changes in motion can be measured and graphically represented.[6.B]
- demonstrate that new substances can be made when two or more substances are chemically combined and compare the properties of the new substances to the original substances.[7.A]
- classify substances by their physical and chemical properties.[7.B]
- define matter and energy.[8.A]

Third Six Weeks :: The student is expected to...

- evaluate the impact of research on scientific thought, society, and the environment.[3.D]
- identify forces that shape features of the Earth including uplifting, movement of water, and volcanic activity.[6.C]
- explain and illustrate the interactions between matter and energy in the water cycle and in the decay of biomass such as in a compost bin.[8.B]
- identify energy transformations occurring during the production of energy for human use such as electrical energy to heat energy or heat energy to electrical energy.[9.A]
- compare methods used for transforming energy in devices such as water heaters, cooling systems, or hydroelectric and wind power plants.[9.B]
- research and describe energy types from their source to their use and determine if the type is renewable, non-renewable, or inexhaustible.[9.C]

Fourth Six Weeks :: The student is expected to...

- represent the natural world using models and identify their limitations.[3.C]
- describe how the properties of a system are different from the properties of its parts.[5.B]
- describe energy flow in living systems including food chains and food webs.[8.C]
- differentiate between structure and function.[10.A]
- determine that all organisms are composed of cells that carry on functions to sustain life.[10.B]

Science, Grade 6

- identify how structure complements function at different levels of organization including organs, organ systems, organisms, and populations.[10.C]
- identify some changes in traits that can occur over several generations through natural occurrence and selective breeding.[11.A]

Fifth Six Weeks :: The student is expected to...

- make wise choices in the use and conservation of resources and the disposal or recycling of materials.[1.B]
- identify cells as structures containing genetic material.[11.B]
- interpret the role of genes in inheritance.[11.C]
- identify responses in organisms to internal stimuli such as hunger or thirst.[12.A]
- identify responses in organisms to external stimuli such as the presence or absence of heat or light.[12.B]
- identify components of an ecosystem to which organisms may respond.[12.C]

Sixth Six Weeks :: The student is expected to...

- summarize the rock cycle.[14.A]
- identify relationships between groundwater and surface water in a watershed.[14.B]
- describe components of the atmosphere, including oxygen, nitrogen, and water vapor, and identify the role of atmospheric movement in weather change.[14.C]

Science, Grade 7

First Six Weeks :: The student is expected to...

- demonstrate safe practices during field and laboratory investigations.[1.A]
- make wise choices in the use and conservation of resources and the disposal or recycling of materials.[1.B]
- plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting and using equipment and technology.[2.A]
- collect data by observing and measuring.[2.B]
- organize, analyze, make inferences, and predict trends from direct and indirect evidence.[2.C]
- communicate valid conclusions.[2.D]
- analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information.[3.A]

Second Six Weeks :: The student is expected to...

- construct graphs, tables, maps, and charts using tools including computers to organize, examine, and evaluate data.[2.E]
- draw inferences based on data related to promotional materials for products and services.[3.B]
- collect, analyze, and record information to explain a phenomenon using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, hot plates, dissecting equipment, test tubes, safety goggles, spring scales, balances, microscopes, telescopes, thermometers, calculators, field equipment, computers, computer probes, timing devices, magnets, and compasses.[4.A]
- describe physical properties of elements and identify how they are used to position an element on the periodic table.[7.B]
- recognize that compounds are composed of elements.[7.C]

Third Six Weeks :: The student is expected to...

- connect Grade 7 science concepts with the history of science and contributions of scientists.[3.F]
- describe how systems may reach an equilibrium such as when a volcano erupts.[5.A]
- demonstrate basic relationships between force and motion using simple machines including pulleys and levers. [6.A]
- demonstrate that an object will remain at rest or move at a constant speed and in a straight line if it is not being subjected to an unbalanced force.[6.B]
- identify and demonstrate everyday examples of chemical phenomena such as rusting and tarnishing of metals and burning of wood.[7.A]

Fourth Six Weeks :: The student is expected to...

- evaluate the impact of research on scientific thought, society, and the environment.[3.D]
- illustrate examples of potential and kinetic energy in everyday life such as objects at rest, movement of geologic faults, and falling water.[8.A]
- identify and illustrate how the tilt of the Earth on its axis as it rotates and revolves around the Sun causes changes in seasons and the length of a day.[13.A]
- relate the Earth's movement and the moon's orbit to the observed cyclical phases of the moon.[13.B]
- describe and predict the impact of different catastrophic events on the Earth.[14.A]
- analyze effects of regional erosional deposition and weathering.[14.B]
- make inferences and draw conclusions about effects of human activity on Earth's renewable, non-renewable, and inexhaustible resources.[14.C]

Science, Grade 7

Fifth Six Weeks :: The student is expected to...

- represent the natural world using models and identify their limitations.[3.C]
- collect and analyze information to recognize patterns such as rates of change.[4.B]
- relate forces to basic processes in living organisms including the flow of blood and the emergence of seedlings. [6.C]
- identify that radiant energy from the Sun is transferred into chemical energy through the process of photosynthesis.[8.B]
- identify the systems of the human organism and describe their functions.[9.A]
- describe how organisms maintain stable internal conditions while living in changing external environments.[9.B]
- analyze changes in organisms such as a fever or vomiting that may result from internal stimuli.[11.A]

Sixth Six Weeks :: The student is expected to...

- identify that sexual reproduction results in more diverse offspring and asexual reproduction results in more uniform offspring.[10.A]
- compare traits of organisms of different species that enhance their survival and reproduction.[10.B]
- distinguish between dominant and recessive traits and recognize that inherited traits of an individual are contained in genetic material.[10.C]
- identify responses in organisms to external stimuli found in the environment such as the presence or absence of light.[11.B]
- identify components of an ecosystem.[12.A]
- observe and describe how organisms including producers, consumers, and decomposers live together in an environment and use existing resources.[12.B]
- describe how different environments support different varieties of organisms.[12.C]
- observe and describe the role of ecological succession in ecosystems.[12.D]

Science, Grade 8

First Six Weeks :: The student is expected to...

- demonstrate safe practices during field and laboratory investigations.[1.A]
- plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting and using equipment and technology.[2.A]
- collect data by observing and measuring.[2.B]
- organize, analyze, evaluate, make inferences, and predict trends from direct and indirect evidence.[2.C]
- communicate valid conclusions.[2.D]
- represent the natural world using models and identify their limitations.[3.C]
- collect, record, and analyze information using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, hot plates, dissecting equipment, test tubes, safety goggles, spring scales, balances, microscopes, telescopes, thermometers, calculators, field equipment, computers, computer probes, water test kits, and timing devices.[4.A]
- extrapolate from collected information to make predictions.[4.B]
- design and test a model to solve the problem.[5.B]
- evaluate the model and make recommendations for improving the model.[5.C]

Second Six Weeks :: The student is expected to...

- describe interactions among systems in the human organism.[6.A]
- identify feedback mechanisms that maintain equilibrium of systems such as body temperature, turgor pressure, and chemical reactions.[6.B]

Third Six Weeks :: The student is expected to...

- describe interactions within ecosystems.[6.C]
- identify that change in environmental conditions can affect the survival of individuals and of species.[11.A]
- distinguish between inherited traits and other characteristics that result from interactions with the environment. [11.B]
- make predictions about possible outcomes of various genetic combinations of inherited characteristics.[11.C]
- predict the results of modifying the Earth's nitrogen, water, and carbon cycles.[12.C]
- analyze how natural or human events may have contributed to the extinction of some species.[14.B]
- describe how human activities have modified soil, water, and air quality.[14.C]

Fourth Six Weeks :: The student is expected to...

- describe interactions among solar, weather, and ocean systems.[10.B]
- analyze and predict the sequence of events in the lunar and rock cycles.[12.A]
- relate the role of oceans to climatic changes.[12.B]
- describe characteristics of the universe such as stars and galaxies.[13.A]
- explain the use of light years to describe distances in the universe.[13.B]
- research and describe historical scientific theories of the origin of the universe.[13.C]
- predict land features resulting from gradual changes such as mountain building, beach erosion, land subsidence, and continental drift.[14.A]

Fifth Six Weeks :: The student is expected to...

- make wise choices in the use and conservation of resources and the disposal or recycling of materials.[1.B]
- demonstrate how unbalanced forces cause changes in the speed or direction of an object's motion.[7.A]
- recognize that waves are generated and can travel through different media.[7.B]
- describe the structure and parts of an atom.[8.A]
- identify the properties of an atom including mass and electrical charge.[8.B]
- demonstrate that substances may react chemically to form new substances.[9.A]
- interpret information on the periodic table to understand that physical properties are used to group elements. [9.B]

Science, Grade 8

- recognize the importance of formulas and equations to express what happens in a chemical reaction.[9.C]
- identify that physical and chemical properties influence the development and application of everyday materials such as cooking surfaces, insulation, adhesives, and plastics.[9.D]
- illustrate interactions between matter and energy including specific heat.[10.A]
- identify and demonstrate that loss or gain of heat energy occurs during exothermic and endothermic chemical reactions.[10.C]

Sixth Six Weeks :: The student is expected to...

- construct graphs, tables, maps, and charts using tools including computers to organize, examine, and evaluate data.[2.E]
- analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information.[3.A]
- draw inferences based on data related to promotional materials for products and services.[3.B]
- evaluate the impact of research on scientific thought, society, and the environment.[3.D]
- connect Grade 8 science concepts with the history of science and contributions of scientists.[3.E]
- identify a design problem and propose a solution.[5.A]