Lakeview Public Schools

Science Curriculum

By Course, Standard, Benchmark

6th Grade Science

SC01 Understands basic features of the Earth

0596 01 Describes the formation of cloud types and the associated weather

0597 02 Describes how the water cycle affects weather and climate patterns

0598 03 Describes various forms that water takes on earth and conditions under which they exist

7386 04 Describe and identify surface features using maps

7387 05 Knows the chemical composition and characteristics of the layers of the earth

7388 06 Knows the earths climate sometimes changes radically to the effects of geological events (glaciers, volcanoes)

SC02 Understands basic Earth processes

7430 01 Describe the origin and effects of air and water pollution (human, technological, and natural)

0628 02 Describes the composition and formation of soil and its fertility and resistance to erosion are greatly influenced by living organisms (e.g., plant roots and debris, bacteria, fungi, worms, rodents, and other animals) as they break up the soil and add organic material to it

7389 03 Add key concept: Michigan rain path to the ocean

7390 04 Add key concept: rock and mineral formation

0631 05 Knows how land forms are created through a combination of constructive and destructive forces; constructive forces include crustal deformation, volcanoes, and deposition of sediment; destructive forces include weathering and erosion

0632 06 Knows that successive layers of sedimentary rock confirm the long history of earth and of changing life forms; the newest layers may not always be found on top because of the folding, breaking, and uplifting of layers

7429 07 Knows water is a solvent; as it passes through the water cycle it dissolves minerals and gases and carries them to the ocean

SC04 Understands diversity and unity that characterize life

0599 01 Knows that animals and plants have a great variety of body systems and internal structures that contribute to their survival and ability to reproduce

SC06 Understands the general structure and functions of cells in organisms

0602 01 Knows that the major levels of organization for structure and function include cells, tissues, organs, organ systems, and whole organisms (body systems -- plant and animal)

0604 02 Knows that specialized cells perform specialized functions in multi-cellular organisms; each type of cell, tissue, and organ has a distinct structure and set of functions that serve the organism as a whole (blood cells/tissue, leaf cells, phloem, etc.)

SC08 Understands the cycling of matter and flow of energy through the living environment

0608 01 Knows that almost all food energy ultimately comes from the sun as plants convert

light into stored chemical energy (PHOTOSYNTHESIS); energy can change from one form to another in living things; and animals get energy from oxidizing their food (CELLULAR RESPIRATION), releasing some of its energy as heat

0609 02 Knows that matter is transferred from one organism to another, and between organisms and their physical environment; the total amount of matter remains constant, even though its form and location change

7804 03 Knows cycles of matter: carbon, nitrogen, water

SC11 Understands energy types, sources, and conversions

0650 01 Knows the sun is the major source of energy for changes on earth's surface; the sun's energy arrives as light with a range of wavelengths consisting mainly of visible light with significant amounts of infrared and ultraviolet radiation

SC12 Understands motion and the principles that explain it

0610 01 Explains how echoes occur and how they are used

0611 02 Knows the light interacts with matter by transmission (including refraction), absorption, or scattering (including reflection)

6310 03 Knows that to see an object, light from that object (emitted by or scattered from it) must enter the eye

0612 04 Explains how sound travels through different media

2027 05 Explains that differences in the wavelength of visible light are seen as differences in color

SC14 Understands the nature of scientific knowledge and inquiry

0613 01 Knows that scientists often repeat an experiment many times before accepting a consistent result as true

0615 02 Uses appropriate tools (including computers) and techniques to gather, analyze, and interpret scientific data

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7th Grade Science

SC04 Understands diversity and unity that characterize life

0635 01 Knows that living things are classified into kingdoms which then are further subdivided

0634 02 Knows the characteristics that define a living thing

7393 03 Classifies organisms based upon characteristics

SC06 Understands the general structure and functions of cells in organisms

0636 01 Knows the structure and function of the parts of plant and animal cells

7394 02 Knows that all organisms are composed of cells, which are the fundamental units of life; most organisms are single cells, but other organisms (including humans) are multicellular

0639 03 Explains diffusion and osmosis and how they relate to cell survival

7395 04 Identifies the stages of mitosis

SC07 Understands how species depend on one another and on the environment for survival

5832 01 Knows the response to a stimulus can be either innate or learned

SC10 Understands basic concepts about the structure and properties of matter

0643 01 Knows that there are more than 100 known elements that combine to form compounds found in living and nonliving substances

0644 02 Knows that elements can be grouped according to their properties

2029 03 Knows that atoms are very small and that different atoms consist of different numbers of sub atomic particles

0646 04 Knows characteristics of solids, liquids and gases in terms of atomic arrangement and relative energy level

7396 05 Describes the processes that cause changes in states of matter

SC11 Understands energy types, sources, and conversions

0648 01 Describes the characteristics of different forms of energy, such as electromagnetic, thermal, chemical, nuclear, mechanical, and electrical

0649 02 Knows that energy cannot be created or destroyed but only change from one form to another

0687 03 Knows that electrical circuits provide a means of converting electrical energy into other forms of energy

0651 04 Knows that heat moves in predictable ways, flowing from high temperature to low temperature

0686 05 Knows that heat can be transferred through materials by conduction, convection, and radiation

SC13 Understands the kind of forces that exist between objects and within atoms

0652 01 Knows that an electric current can produce magnetic forces and magnetic forces can

produce electric currents

SC14 Understands the nature of scientific knowledge and inquiry

0654 01 Designs and conducts a controlled experiment

0655 02 Applies the SI system of measurement when designing an experiment

2030 03 Knows the difference between observation and inferences; distinguishes between quantitative and qualitative observations

2028 04 Knows the parts of the microscope and their proper use

7397 05 Identifies the benefits and risks of new technology

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Science Curriculum

By Course, Standard, Benchmark

8th Grade Science

SC01 Understands basic features of the Earth

0662 01 Knows that the tilt of earth's axis and direction of the sun's rays causes differences in heating of earth's surface producing the planet's seasons and weather patterns

SC02 Understands basic Earth processes

7398 01 Knows that fossils provide important evidence of how life and environmental conditions have changed on earth over time (e.g., changes in atmospheric composition, impact of asteroid or comet)

SC03 Understands the composition and structure of the universe and the Earth's place in it

0668 01 Knows that the moon goes through a series of phases every 28 days

0670 02 Compare our sun to other stars and star systems

7399 03 Explain how stars form and how they produce energy

7400 04 Describe the position and motion of our solar system in the universe

7401 05 Explain common observations of the day and night sky

SC05 Understands the genetic basis for the transfer of characteristics between generations

0673 01 Knows that in some kinds of organisms, all the genes come from a single parent, whereas in organisms that have sexes, typically half of the genes come from each parent

0674 02 Knows that in sexual reproduction, an egg from a female unites with a sperm from a male to begin the development of a new individual; sexually produced offspring are never identical to either of their parents

0675 03 Knows that the characteristics of an organism can be described in terms of a combination of traits; some traits are inherited and others are a result of interactions with the environment

0676 04 Knows that hereditary information is contained in genes, located in the chromosomes of each cell; each gene carries a single unit of information, and an inherited trait of an individual can be determined by either one or many genes

0677 05 Knows that selective breeding can cause small differences between parents and offspring to accumulate in successive generations so that descendants are very different from their ancestors

7402 06 Identifies the stages of meiosis

7805 07 Knows that disease represents a breakdown in structures or functions of an organism; some diseases are the result of intrinsic failures of the system, whereas others are the result of infection by other organisms

SC09 Understands basic concepts of the evolution of species

0678 01 Knows that the fossil record documents the appearance, diversification, and extinction of many life forms

0679 02 Knows that the extinction of a species occurs when the environment changes and

the adaptive characteristics of a species do not enable it to survive in competition with its neighbors

0680 03 Knows that variation of a trait within a species allows for evolutionary change (e.g., structure, behavior, physiology)

0672 04 Knows that reproduction is a characteristic of all living organisms; since no individual organism lives forever, reproduction is essential to the continuation of species

SC10 Understands basic concepts about the structure and properties of matter

0681 01 Knows methods used to separate mixtures into their component parts (e.g. boiling, filtering, screening, chromatography)

0682 02 Knows and understands conservation of mass

0683 03 Knows that various factors influence reaction rates (e.g., temperature, acidity, solubility, particle size, catalysts)

0684 04 Knows that oxidation involves the combining of oxygen and another substance as in rusting or burning

0685 05 Knows that substances react chemically in characteristic ways with other substances to form new substances (compounds) with different characteristic properties

7403 06 Differentiate between physical and chemical properties

0647 07 Differentiate between physical and chemical changes

SC12 Understands motion and the principles that explain it

0689 01 Knows that an object's motion can be described by position, direction of motion, and speed

0690 02 Knows that the motion of an object is always judged with respect to some other object or point

0691 03 Describes various physical forces (gravity, centripetal, centrifugal, buoyant, friction, applied)

0692 04 Relate changes in speed or direction to unbalanced forces in two dimensions (speed and acceleration)

0693 05 Describes the motion of a pendulum

7404 06 Design strategies for moving objects by application of forces

SC13 Understands the kind of forces that exist between objects and within atoms

0694 01 Knows that every object exerts gravitational force on every other object

SC14 Understands the nature of scientific knowledge and inquiry

0696 01 Knows that scientific explanations used to logically explain phenomenon and remain in place until further inquiry advances other concepts

0695 02 Knows that scientists evaluate the results of scientific investigations and the explanations proposed by other scientists by reviewing experimental procedures, examining evidence, identifying faulty reasoning, pointing out statements that go beyond the evidence, and suggesting alternative explanations for the same observations

0697 03 Knows that scientific investigations sometimes result in new ideas, objects, and phenomena for study, new methods or procedures for an investigation, or new technologies to improve the collection of data; all of these results lead to new investigations