

High School Science Tested Indicators

Indicator #	Text of Indicator	Physical or Life Science Test Component
S.HS.1.1.2	▲ actively engages in investigations, including developing questions, gathering and analyzing data, and designing and conducting research	P
S.HS.1.1.3	▲ actively engages in using technological tools and mathematics in their own scientific investigations.	P
S.HS.2A.1.1	▲ understands atoms, the fundamental organizational unit of matter, are composed of subatomic particles. Chemists are primarily interested in the protons, electrons, and neutrons found in the atom.	P
S.HS.2A.2.1	▲ understands chemists use kinetic and potential energy to explain the physical and chemical properties of matter on earth that may exist in any of these three states: solids, liquids, and gases.	P
S.HS.2A.2.2	▲ understands the periodic table lists elements according to increasing atomic number. This table organizes physical and chemical trends by groups, periods, and sub-categories.	P
S.HS.2A.2.3	▲ understands chemical bonds result when valence electrons are transferred or shared between atoms. Breaking a chemical bond requires energy. Formation of a chemical bond releases energy. Ionic compounds result from atoms transferring electrons. Molecular compounds result from atoms sharing electrons. For example, carbon atoms can bond to each other in chains, rings, and branching networks. Branched network and metallic solids also result from bonding.	P
S.HS.2A.3.1	▲ understands a chemical reaction occurs when one or more substances (reactants) react to form a different chemical substance(s) (products). There are different types of chemical reactions all of which demonstrate the Law of Conservation of Matter and Energy.	P
S.HS.2B.1.1	▲ understands Newton's Laws and the variables of time, position, velocity, and acceleration can be used to describe the position and motion of particles.	P
S.HS.2B.2.2	▲ understands the first law of thermodynamics states the total internal energy of a substance (the sum of all the kinetic and potential energies of its constituent molecules) will change only if heat is exchanged with the environment or work is done on or by the substance. In any physical interaction, the total energy in the universe is conserved.	P
S.HS.2B.3.2	▲ understands waves have energy and can transfer energy when they interact with matter.	P
S.HS.2B.3.5	▲ understands electromagnetic waves result when a charged particle is accelerated or decelerated.	P
S.HS.3.1.2	▲ understands cell functions involve specific chemical reactions.	L
S.HS.3.2.1	▲ understands living organisms contain DNA or RNA as their genetic material, which provides the instructions that specify the characteristics of organisms.	L

S.HS.3.2.3	▲ understands hereditary information is contained in genes, located in the chromosomes of each cell.	L
S.HS.3.3.1	▲ understands biological evolution, descent with modification, is a scientific explanation for the history of the diversification of organisms from common ancestors.	L
S.HS.3.3.3	▲ understands biological evolution is used to explain the earth's present day biodiversity: the number, variety and variability of organisms.	L
S.HS.3.3.4	▲ understands organisms vary widely within and between populations. Variation allows for natural selection to occur.	L
S.HS.3.4.1	▲ understands atoms and molecules on the earth cycle among the living and nonliving components of the biosphere.	L
S.HS.3.4.3	▲ understands the distribution and abundance of organisms and populations in ecosystems are limited by the carrying capacity.	L
S.HS.3.5.2	▲ understands the sun is the primary source of energy for life through the process of photosynthesis.	L
S.HS.3.5.3	▲ understands food molecules contain biochemical energy, which is then available for cellular respiration.	L
S.HS.3.6.1	▲ understands animals have behavioral responses to internal changes and to external stimuli.	L
S.HS.3.7.2	▲ understands that homeostasis is the dynamic regulation and balance of an organisms internal environment to maintain conditions suitable for survival.	L
S.HS.3.7.3	▲ understands that living things change following a specific pattern of developmental stages called life cycles.	L
S.HS.4.1.2	▲ understands the theory of Plate Tectonics explains that internal energy drives the earth's ever changing structure.	P
S.HS.4.2.1	▲ understands geological time is used to understand the earth's past.	L
S.HS.4.3.2	▲ understands the relationship between the earth, moon, and sun explains the seasons, tides and moon phases.	P
S.HS.4.4.1	▲ understands stellar evolution.	P
S.HS.5.1.1	▲ understands technology is the application of scientific knowledge for functional purposes.	P
S.HS.6.3.1	▲ understands natural resources from the lithosphere and ecosystems are required to sustain human populations.	L