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| I. Science |  |
| **A. Earth Science** |  |
| 1. Understands the structure of the Earth system (e.g., structure and properties of the solid Earth, the hydrosphere, the atmosphere)
 | [Structure of the earth](https://www.khanacademy.org/science/cosmology-and-astronomy/earth-history-topic/plate-techtonics/v/structure-of-the-earth)[Compositional and mechanical layers of the earth](https://www.khanacademy.org/science/cosmology-and-astronomy/earth-history-topic/plate-techtonics/v/compositional-and-mechanical-layers-of-the-earth)[How we know about the earth’s core](https://www.khanacademy.org/science/cosmology-and-astronomy/earth-history-topic/plate-techtonics/v/how-we-know-about-the-earth-s-core) |
| 1. Understands processes of the Earth system (e.g., earth processes of the solid Earth, the hydrosphere, the atmosphere)
 | [Plate tectonics: Evidence of plate movement](https://www.khanacademy.org/science/cosmology-and-astronomy/earth-history-topic/plate-techtonics/v/plate-tectonics-evidence-of-plate-movement)[Plate tectonics: Geological features of divergent plate boundaries](https://www.khanacademy.org/science/cosmology-and-astronomy/earth-history-topic/plate-techtonics/v/plate-tectonics-geological-features-of-divergent-plate-boundaries)[Plate tectonics: Geological features of convergent plate boundaries](https://www.khanacademy.org/science/cosmology-and-astronomy/earth-history-topic/plate-techtonics/v/plate-tectonics-geological-features-of-convergent-plate-boundaries)[Plates moving due to convection in mantle](https://www.khanacademy.org/science/cosmology-and-astronomy/earth-history-topic/plate-techtonics/v/plates-moving-due-to-convection-in-mantle)[Seismic waves](https://www.khanacademy.org/science/cosmology-and-astronomy/earth-history-topic/seismic-waves-tutorial/v/seismic-waves)[Biogeochemical cycles overview](https://www.khanacademy.org/science/high-school-biology/hs-ecology/hs-biogeochemical-cycles/v/biogeochemical-cycles)[The water cycle](https://www.khanacademy.org/science/high-school-biology/hs-ecology/hs-biogeochemical-cycles/v/the-water-cycle) |
| 1. Understands Earth history (e.g., origin of Earth, paleontology, the rock record)
 | [Earth formation](https://www.khanacademy.org/science/biology/history-of-life-on-earth/history-life-on-earth/v/earth-formation)[Beginnings of life](https://www.khanacademy.org/science/biology/history-of-life-on-earth/history-life-on-earth/v/beginnings-of-life)[Hawaiian islands formation](https://www.khanacademy.org/science/cosmology-and-astronomy/earth-history-topic/plate-techtonics/v/hawaiian-islands-formation)[Pangaea](https://www.khanacademy.org/science/cosmology-and-astronomy/earth-history-topic/plate-techtonics/v/pangaea)[Fossils: Rocking the Earth](https://www.khanacademy.org/science/high-school-biology/hs-evolution/hs-evidence-of-evolution/v/fossils-rocking-the-earth) |
| 1. Understands Earth and the universe (e.g., stars and galaxies; the solar system and planets; Earth, Sun, and Moon relationships)
 | [Intro to Moon phases](https://www.khanacademy.org/science/cosmology-and-astronomy/earth-history-topic/moon-phases-and-eclipses/v/intro-to-moon-phases)[Solar and lunar eclipses](https://www.khanacademy.org/science/cosmology-and-astronomy/earth-history-topic/moon-phases-and-eclipses/v/solar-and-lunar-eclipses)[Scale of the large](https://www.khanacademy.org/science/cosmology-and-astronomy/universe-scale-topic/scale-earth-galaxy-tutorial/v/scale-of-the-large)[Scale of earth and sun](https://www.khanacademy.org/science/cosmology-and-astronomy/universe-scale-topic/scale-earth-galaxy-tutorial/v/scale-of-earth-and-sun)[Scale of solar system](https://www.khanacademy.org/science/cosmology-and-astronomy/universe-scale-topic/scale-earth-galaxy-tutorial/v/scale-of-solar-system)[Scale of distance to closest stars](https://www.khanacademy.org/science/cosmology-and-astronomy/universe-scale-topic/scale-earth-galaxy-tutorial/v/scale-of-distance-to-closest-stars)[Scale of the galaxy](https://www.khanacademy.org/science/cosmology-and-astronomy/universe-scale-topic/scale-earth-galaxy-tutorial/v/scale-of-the-galaxy)[Big bang introduction](https://www.khanacademy.org/science/cosmology-and-astronomy/universe-scale-topic/big-bang-expansion-topic/v/big-bang-introduction) |
| 1. Understands Earth patterns, cycles, and change
 | [Seasons aren’t dictated by closeness to sun](https://www.khanacademy.org/science/cosmology-and-astronomy/earth-history-topic/earth-title-topic/v/seasons-aren-t-dictated-by-closeness-to-sun)[How Earth’s tilt causes seasons](https://www.khanacademy.org/science/cosmology-and-astronomy/earth-history-topic/earth-title-topic/v/how-earth-s-tilt-causes-seasons)[Biogeochemical cycles overview](https://www.khanacademy.org/science/high-school-biology/hs-ecology/hs-biogeochemical-cycles/v/biogeochemical-cycles)[The water cycle](https://www.khanacademy.org/science/high-school-biology/hs-ecology/hs-biogeochemical-cycles/v/the-water-cycle) |
| 1. Understands science as a human endeavor, process, and career
 | Not covered by Khan Academy videos |
| 1. Understands science as inquiry (e.g., questioning, gathering data, drawing reasonable conclusions)
 | [The scientific method](https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biology-and-the-scientific-method/v/the-scientific-method)[Data to justify experimental claims examples](https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biology-and-the-scientific-method/v/data-to-justify-experimental-claims-examples)[Introduction to experimental design](https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biology-and-the-scientific-method/v/introduction-to-experimental-design) |
| 1. Understands how to use resource and research material in science
 | Not covered by Khan Academy videos |
| 1. Understands the unifying processes of science (e.g., systems, order, and organization)
 | Not covered by Khan Academy videos |
| **B. Life Science** |  |
| 1. Understands the structure and function of living systems (e.g., living characteristics and cells, tissues and organs, life processes)
 | [Biology overview](https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biology-and-the-scientific-method/v/overview-of-biology)[Scale of the small](https://www.khanacademy.org/science/cosmology-and-astronomy/universe-scale-topic/scale-earth-galaxy-tutorial/v/scale-of-the-small)[The discovery of the double helix structure of DNA](https://www.khanacademy.org/science/biology/dna-as-the-genetic-material/dna-discovery-and-structure/v/the-discovery-of-the-double-helix-structure-of-dna)[DNA replication and RNA transcription and translation](https://www.khanacademy.org/science/biology/dna-as-the-genetic-material/dna-replication/v/rna-transcription-and-translation)[Introduction to metabolism: Anabolism and catabolism](https://www.khanacademy.org/science/high-school-biology/hs-energy-and-transport/hs-introduction-to-metabolism/v/introduction-to-metabolism-anabolism-and-catabolism)[ATP: Adenosine triphosphate](https://www.khanacademy.org/science/high-school-biology/hs-energy-and-transport/hs-introduction-to-metabolism/v/adenosine-triphosphate)[Enzymes](https://www.khanacademy.org/science/high-school-biology/hs-energy-and-transport/hs-enzymes/v/enzymes)[Scale of cells](https://www.khanacademy.org/science/high-school-biology/hs-cells/hs-introduction-to-cells/v/scale-of-cells)[Cell theory](https://www.khanacademy.org/science/high-school-biology/hs-cells/hs-introduction-to-cells/v/cell-theory)[Prokaryotic and eukaryotic cells](https://www.khanacademy.org/science/biology/structure-of-a-cell/prokaryotic-and-eukaryotic-cells/v/prokaryotic-and-eukaryotic-cells)[Overview of animal and plant cells](https://www.khanacademy.org/science/high-school-biology/hs-cells/hs-plant-vs-animal-cells/v/overview-of-animal-and-plant-cells)[Cellular respiration introduction](https://www.khanacademy.org/science/high-school-biology/hs-energy-and-transport/hs-cellular-respiration/v/introduction-to-cellular-respiration)[Photosynthesis](https://www.khanacademy.org/science/biology/photosynthesis-in-plants/introduction-to-stages-of-photosynthesis/v/photosynthesis)[Interphase](https://www.khanacademy.org/science/high-school-biology/hs-reproduction-and-cell-division/hs-the-cell-cycle-and-mitosis/v/mitosis)[Mitosis](https://www.khanacademy.org/science/high-school-biology/hs-reproduction-and-cell-division/hs-the-cell-cycle-and-mitosis/v/mitosis)[Comparing mitosis and meiosis](https://www.khanacademy.org/science/high-school-biology/hs-reproduction-and-cell-division/hs-meiosis/v/comparing-mitosis-and-meiosis)[Cancer](https://www.khanacademy.org/science/high-school-biology/hs-reproduction-and-cell-division/hs-the-cell-cycle-and-mitosis/v/cancer) |
| 1. Understands reproduction and heredity (e.g., growth and development, patterns of inheritance of traits, molecular basis of heredity)
 | [Fertilization terminology: gametes, zygotes, haploid, diploid](https://www.khanacademy.org/science/biology/cellular-molecular-biology/intro-to-cell-division/v/fertilization-haploid-diploid-gamete-zygote-homologous)[Zygote differentiating into somatic and germ cells](https://www.khanacademy.org/science/biology/cellular-molecular-biology/intro-to-cell-division/v/somatic-germ-cells)[Introduction to heredity](https://www.khanacademy.org/science/high-school-biology/hs-classical-genetics/hs-introduction-to-heredity/v/introduction-to-heredity)[Alleles and genes](https://www.khanacademy.org/science/high-school-biology/hs-classical-genetics/hs-introduction-to-heredity/v/alleles-and-genes)[Worked example: Punnett squares](https://www.khanacademy.org/science/high-school-biology/hs-classical-genetics/hs-introduction-to-heredity/v/punnett-square-fun)[Thomas Hunt Morgan and fruit flies](https://www.khanacademy.org/science/biology/classical-genetics/chromosomal-basis-of-genetics/v/thomas-hunt-morgan-and-fruit-flies)[Cellular specialization (differentiation)](https://www.khanacademy.org/science/biology/developmental-biology/development-and-differentiation/v/cellular-specialization-differentiation) |
| 1. Understands change over time in living things (e.g., life cycles, mutations, adaptation and natural selection)
 | [Introduction to evolution and natural selection](https://www.khanacademy.org/science/high-school-biology/hs-evolution/hs-evolution-and-natural-selection/v/introduction-to-evolution-and-natural-selection)[Variation in a species](https://www.khanacademy.org/science/high-school-biology/hs-evolution/hs-evolution-and-natural-selection/v/variation-in-a-species)[Evidence for evolution](https://www.khanacademy.org/science/high-school-biology/hs-evolution/hs-evidence-of-evolution/v/evidence-for-evolution)[DNA spells evolution](https://www.khanacademy.org/science/high-school-biology/hs-evolution/hs-evidence-of-evolution/v/dna-spells-evolution)[Species](https://www.khanacademy.org/science/high-school-biology/hs-evolution/hs-phylogeny/v/species)[Biodiversity and natural selection](https://www.khanacademy.org/science/high-school-biology/hs-evolution/hs-phylogeny/v/biodiversity-and-natural-selection-two)[Genetic variation, gene flow, and new species](https://www.khanacademy.org/science/high-school-biology/hs-evolution/hs-phylogeny/v/genetic-variation-gene-flow-and-new-species) |
| 1. Understands regulation and behavior (e.g., life cycles, responses to external stimuli, controlling the internal environment)
 | [Homeostasis](https://www.khanacademy.org/science/high-school-biology/hs-human-body-systems/hs-body-structure-and-homeostasis/v/homeostasis)[Animal communication](https://www.khanacademy.org/science/biology/behavioral-biology/animal-behavior/v/animal-communication)[Animal behavior: foraging](https://www.khanacademy.org/science/biology/behavioral-biology/animal-behavior/v/animal-behavior-foraging) |
| 1. Understands unity and diversity of life, adaptation, and classification
 | [Variation in a species](https://www.khanacademy.org/science/high-school-biology/hs-evolution/hs-evolution-and-natural-selection/v/variation-in-a-species)[Fossils: Rocking the Earth](https://www.khanacademy.org/science/high-school-biology/hs-evolution/hs-evidence-of-evolution/v/fossils-rocking-the-earth)[Taxonomy and the tree of life](https://www.khanacademy.org/science/high-school-biology/hs-evolution/hs-phylogeny/v/taxonomy-and-the-tree-of-life)[Biodiversity and natural selection](https://www.khanacademy.org/science/high-school-biology/hs-evolution/hs-phylogeny/v/biodiversity-and-natural-selection-two)[Discovering the tree of life](https://www.khanacademy.org/science/biology/her/tree-of-life/v/discovering-the-tree-of-life)[How biodiversity is distributed globally](https://www.khanacademy.org/science/biology/ecology/biogeography/v/distribution-how)[Why biodiversity is distributed globally](https://www.khanacademy.org/science/biology/ecology/biogeography/v/distributionwhy)[Prokaryotic and eukaryotic cells](https://www.khanacademy.org/science/high-school-biology/hs-cells/hs-prokaryotes-and-eukaryotes/v/prokaryotic-and-eukaryotic-cells)[Bacteria](https://www.khanacademy.org/science/biology/bacteria-archaea/prokaryote-structure/v/bacteria) |
| 1. Understands the interdependence of organisms (e.g., ecosystems, populations, communities)
 | [Ecology introduction](https://www.khanacademy.org/science/high-school-biology/hs-ecology/hs-introduction-to-ecology/v/ecology-introduction)[Interactions between populations](https://www.khanacademy.org/science/high-school-biology/hs-ecology/hs-ecological-relationships/v/interactions-between-populations)[Predator-prey cycles](https://www.khanacademy.org/science/high-school-biology/hs-ecology/hs-ecological-relationships/v/predator-prey-cycle)[Ecosystems and ecological networks](https://www.khanacademy.org/science/high-school-biology/hs-ecology/hs-community-ecology/v/biodiversity-ecosystems-and-ecological-networks)[Ecosystems and biomes](https://www.khanacademy.org/science/high-school-biology/hs-ecology/hs-introduction-to-ecology/v/ecosystems-and-biomes)[Flow of energy and matter through ecosystems](https://www.khanacademy.org/science/high-school-biology/hs-ecology/trophic-levels/v/flow-of-energy-and-matter-through-ecosystems)[Example identifying roles in a food web](https://www.khanacademy.org/science/high-school-biology/hs-ecology/trophic-levels/v/example-identifying-roles-in-a-food-web) |
| 1. Knows about personal health (e.g., nutrition, communicable diseases, substance abuse)
 | [LeBron Asks: Why does sweating cool you down?](https://www.khanacademy.org/science/biology/water-acids-and-bases/water-as-a-solid-liquid-and-gas/v/lebron-asks-why-does-sweating-cool-you-down)[Viruses](https://www.khanacademy.org/science/biology/biology-of-viruses/virus-biology/v/viruses)[Cancer](https://www.khanacademy.org/science/high-school-biology/hs-reproduction-and-cell-division/hs-the-cell-cycle-and-mitosis/v/cancer) |
| 1. Understands science as a human endeavor, process, and career
 | Not covered by Khan Academy videos |
| 1. Understands science as inquiry (e.g., questioning, gathering data, drawing reasonable conclusions)
 | [The scientific method](https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biology-and-the-scientific-method/v/the-scientific-method)[Data to justify experimental claims examples](https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biology-and-the-scientific-method/v/data-to-justify-experimental-claims-examples)[Introduction to experimental design](https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biology-and-the-scientific-method/v/introduction-to-experimental-design) |
| 1. Understands how to use resource and research material in science
 | Not covered by Khan Academy videos |
| 1. Understands the unifying processes of science (e.g., systems, order, and organization)
 | Not covered by Khan Academy videos |
| **C. Physical Science** |  |
| 1. Understands the physical and chemical properties and structure of matter (e.g., changes of states, mixtures and solutions, atoms and elements)
 | [Elements and atoms](https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biological-macromolecules/v/elements-and-atoms)[Elements and atoms](https://www.khanacademy.org/science/biology/chemistry--of-life/elements-and-atoms/v/elements-and-atoms)[Introduction to the atom](https://www.khanacademy.org/science/biology/chemistry--of-life/elements-and-atoms/v/introduction-to-the-atom)[Groups of the periodic table](https://www.khanacademy.org/science/biology/chemistry--of-life/electron-shells-and-orbitals/v/periodic-table-groups)[Ionic, covalent, and metallic bonds](https://www.khanacademy.org/science/biology/chemistry--of-life/chemical-bonds-and-reactions/v/ionic-covalent-and-metallic-bonds)[Chemical reactions introduction](https://www.khanacademy.org/science/biology/chemistry--of-life/chemical-bonds-and-reactions/v/chemical-reactions-introduction)[Hydrogen bonding in water](https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-water-and-life/v/hydrogen-bonding-in-water)[Water as a solvent](https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-water-and-life/v/water-as-a-solvent)[Liquid water denser than solid water (ice)](https://www.khanacademy.org/science/biology/water-acids-and-bases/water-as-a-solid-liquid-and-gas/v/liquid-water-denser-than-solid-water-ice)[Definition of pH](https://www.khanacademy.org/science/biology/water-acids-and-bases/acids-bases-and-ph/v/introduction-to-definition-of-ph)[Introduction to buffers](https://www.khanacademy.org/science/biology/water-acids-and-bases/acids-bases-and-ph/v/buffer-system) |
| 1. Understands forces and motions (e.g., types of motion, laws of motion, forces and equilibrium)
 | [Introduction to physics](https://www.khanacademy.org/science/ap-physics-1/ap-one-dimensional-motion/ap-physics-foundations/v/introduction-to-physics)[Calculating average velocity or speed](https://www.khanacademy.org/science/physics/one-dimensional-motion/displacement-velocity-time/v/calculating-average-velocity-or-speed)[Position vs. time graphs](https://www.khanacademy.org/science/physics/one-dimensional-motion/displacement-velocity-time/v/position-vs-time-graphs)[Acceleration](https://www.khanacademy.org/science/ap-physics-1/ap-one-dimensional-motion/average-and-instantaneous-acceleration/v/acceleration)[Newton’s first law of motion introduction](https://www.khanacademy.org/science/ap-physics-1/ap-forces-newtons-laws/newtons-first-law-mass-and-inertia-ap/v/newton-s-1st-law-of-motion)[Newton’s second law of motion](https://www.khanacademy.org/science/ap-physics-1/ap-forces-newtons-laws/newtons-second-law-ap/v/newton-s-second-law-of-motion)[Newton’s third law of motion](https://www.khanacademy.org/science/ap-physics-1/ap-forces-newtons-laws/newtons-third-law-ap/v/newton-s-third-law-of-motion)[Balanced and unbalanced forces](https://www.khanacademy.org/science/physics/forces-newtons-laws/balanced-unbalanced-forces/v/balanced-and-unbalanced-forces)[Unbalanced forces and motion](https://www.khanacademy.org/science/physics/forces-newtons-laws/balanced-unbalanced-forces/v/unbalanced-forces-and-motion)[Introduction to gravity](https://www.khanacademy.org/science/ap-physics-1/ap-centripetal-force-and-gravitation/newtons-law-of-gravitation-ap/v/introduction-to-gravity)[Mass and weight clarification](https://www.khanacademy.org/science/physics/centripetal-force-and-gravitation/gravity-newtonian/v/mass-and-weight-clarification)[Gravity for astronauts in orbit](https://www.khanacademy.org/science/physics/centripetal-force-and-gravitation/gravity-newtonian/v/gravity-for-astronauts-in-orbit)[Would a brick or feather fall faster?](https://www.khanacademy.org/science/physics/centripetal-force-and-gravitation/gravity-newtonian/v/would-a-brick-or-feather-fall-faster)[Archimedes principle and buoyant force](https://www.khanacademy.org/science/physics/fluids/buoyant-force-and-archimedes-principle/v/fluids-part-5) |
| 1. Understands energy (e.g., forms of energy, transfer and conservation of energy, simple machines)
 | [Introduction to energy](https://www.khanacademy.org/science/biology/energy-and-enzymes/the-laws-of-thermodynamics/v/introduction-to-energy)[Conservation of energy](https://www.khanacademy.org/science/physics/work-and-energy/work-and-energy-tutorial/v/conservation-of-energy) |
| 1. Understands interactions of energy and matter (e.g., electricity, magnetism, sound)
 | [Triboelectric effect and charge](https://www.khanacademy.org/science/ap-physics-1/ap-electric-charge-electric-force-and-voltage/electric-charge-ap/v/triboelectric-effect-and-charge)[Introduction to magnetism](https://www.khanacademy.org/science/physics/magnetic-forces-and-magnetic-fields/magnets-magnetic/v/introduction-to-magnetism)[Introduction to waves](https://www.khanacademy.org/science/ap-physics-1/ap-mechanical-waves-and-sound/introduction-to-transverse-and-longitudinal-waves-ap/v/introduction-to-waves)[Production of sound](https://www.khanacademy.org/science/ap-physics-1/ap-mechanical-waves-and-sound/introduction-to-sound-waves-ap/v/production-of-sound)[Sound Properties: Amplitude, period, frequency, wavelength](https://www.khanacademy.org/science/ap-physics-1/ap-mechanical-waves-and-sound/introduction-to-sound-waves-ap/v/sound-properties-amplitude-period-frequency-wavelength)[Doppler effect introduction](https://www.khanacademy.org/science/ap-physics-1/ap-mechanical-waves-and-sound/doppler-effect-ap/v/introduction-to-the-doppler-effect) |
| 1. Understands science as a human endeavor, process, and career
 | Not covered by Khan Academy videos |
| 1. Understands science as inquiry (e.g., questioning, gathering data, drawing reasonable conclusions)
 | [The scientific method](https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biology-and-the-scientific-method/v/the-scientific-method)[Data to justify experimental claims examples](https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biology-and-the-scientific-method/v/data-to-justify-experimental-claims-examples)[Introduction to experimental design](https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biology-and-the-scientific-method/v/introduction-to-experimental-design) |
| 1. Understands how to use resource and research material in science
 | Not covered by Khan Academy videos |
| 1. Understands the unifying processes of science (e.g., systems, order, and organization)
 | Not covered by Khan Academy videos |