

Science Review

The following is a modified version of the ACT's own list of topics on the Science Test, which also includes common high school science concepts. These concepts may or may not appear in the passages, and they may or may not appear in direct-knowledge-type questions, but understanding them will help you be fully prepared for test day.

It's a good idea to familiarize yourself with these concepts if you've never heard of them. If you've heard of them, it's a good idea to refresh your memory about key concepts and terms from these areas. If any of these terms look unfamiliar, you should consult science textbooks from your school. Brief online searches may also help solidify this knowledge.

Biology	animal behavior, animal development and growth, a/biotic factors, adaptation, a/sexual reproduction, an/aerobic conditions, biodiversity, biomolecules, body systems, carrying capacity, cellular respiration, climate change, ecology, ecosystems, energy flow, evolution, extinction, genetics, heredity, homeostasis, infection, life cycles, meiosis and mitosis, microbiology, molecular biology, mutation, organelles, organs, origin of life, photosynthesis, plant development and growth, taxonomy
Physics	acceleration, circular motion, conservation of energy, displacement, force and motion, friction, gravity, heat and work, kinetic and potential energy, magnetism, momentum, position, properties of matter and waves, reflection, refraction, sound and light, springs, superposition and interference, vectors, velocity, wavelength,
Chemistry	acids and bases, atomic structure, chemical bonding, chromatography, combined gas law, endo/exothermic reactions, equations, equilibrium, electrical circuits, energy curves and catalysts, entropy, intra/intermolecular forces, kinetic molecular theory, Le Chatelier's principle nomenclature, nuclear chemistry, organic chemistry, periodic table and trends, phases of matter, pH scale, properties of solutions, reactions, reduction and oxidation, stoichiometry, titration
Space Science	age of the universe, asteroids, Big Bang, climate change, comets, earth's atmosphere, galactic motion, meteors, orbital motion, ozone, planets, solar system, star life cycles, weather and climate
Earth Science	carbon cycle, earthquakes and volcanoes, earth's resources, erosion, fossils and geological time, geochemical cycles, lakes, rivers, oceans, plate tectonics, rocks and minerals, thermal convection and the core, water cycles

Science Glossary

The Science Test expects you to understand basic mathematical terms (surface area, volume, percent, diameter, etc.). In addition to these, you should be familiar with science material taught up to, and sometimes including, the eleventh grade. Basic scientific terms (solid, liquid, gas, etc.) are not presented in the following glossary.

If the brief definitions and formula provided in this list are not enough to help refresh or familiarize the terms and concepts, you should consult science textbooks from your school. Brief online searches may also help solidify this knowledge.

Here is a sample list of concepts and terms previously tested on the ACT:

Term	Definition
Absorption	matter converts electromagnetic radiation (e.g. light) into internal energy
Acceleration	change in speed over change in time, $a = \frac{\Delta v}{\Delta t}$
Acid	proton donor or electron pair acceptor in chemical reactions, has a pH of 7 or less
Amino Acid	the subunit from which proteins are made, contains an amino group (NH ₂) and a carboxyl group (COOH)
Amplitude	magnitude of a wave, measured from equilibrium to maximum height (or depth)
ATP	adenosine triphosphate, supplies energy for most cellular processes
Attraction	electrostatic force that binds atoms or molecules with opposite charges
Base	proton acceptor or electron pair donor in chemical reactions, has a pH of 7 or more
Boiling	change in state from liquid to gas (water boils at 100°C)
Carbohydrate	chemical compound of carbon, hydrogen, and oxygen in a 1:2:1 ratio, provides energy (glucose, C ₆ H ₁₂ O ₆ , is a type of sugar, which is a carbohydrate)
Charge	property of matter, considered as either positive (+) or negative (-), allows particles to exhibit attraction or repulsion
Chromatid	one strand of a pair that makes up a chromosome, composed of a double helix of DNA
Chromosome	structure of nucleic acids and proteins, found in cellular nuclei, carries genetic information

Concentration	amount of solute per unit volume of solution, usually measured in mass per volume (e.g. g/L), volume per volume (e.g. mL/L), number, or percent
Conduction	direct transmittance of heat or electricity through a substance, usually due to difference of temperature or electrical potential
Contamination	unwanted pollution of one substance by another, the introduction of impurities
Convection	movement in a fluid caused by the rising of hotter, less dense material, and the sinking of colder, denser material
Density	quantity of mass per unit volume, usually measured in mass per volume
DNA	deoxyribonucleic acid, self-replicating molecule composed of two strings of nucleotides, the main carrier of genetic information
Freezing	change in state from liquid to solid (water freezes at 0°C)
Friction	resistance between two surfaces when they move over each other, moves in the opposite direction of motion
Gamete	cell with half of the genetic information of an organism, able to unite with another gamete during sexual reproduction to form a zygote, which will grow into an organism (e.g. sperm, eggs)
Greenhouse Gas	gas that absorbs infrared radiation and warms the Earth (e.g. methane (CH ₄), carbon dioxide (CO ₂))
Kinetic Energy	energy an object possesses when it is in motion, equal to half the object's mass multiplied by the square of its velocity, $E_k = \frac{1}{2}mv^2$
Lipid	chemical compound of carbon, hydrogen, and oxygen, composed of fatty acids and glycerin, insoluble in water, stores energy for cellular processes and is a part of cell membranes (also sometimes called fats)
Moles	unit that measures the number of elementary particles in a substance, one mole = 6.023×10^{23} particles
Newton's 1st Law	objects in a state of constant motion (or rest) remain that way unless an external force is applied
Newton's 3rd Law	for every force, there is an equal and opposite reactive force
Nucleic Acid	complex molecule composed of strings of nucleotides, often carries genetic information (e.g. DNA, RNA)
pH Scale	a number from 1 to 14 that indicates the concentration of hydrogen ions in a substance; 7 is neutral, higher than 7 is basic, and lower than 7 is acidic. Values one unit apart on this scale vary by a factor of 10 (e.g. a pH of 2 is 10x more acidic than a pH of 3)
Pressure	force exerted per unit area, measured in millimeters mercury (mmHg), atmospheres (atm), or pascals (Pa)

Protein	complex molecule composed of chains of amino acids, essential to living organisms as enzymes and structural components
Radiation	emission of energy as electromagnetic waves (or moving subatomic particles)
Reaction Rate	the speed at which the reactants of a reaction are converted to its products. Reaction rate increases when surface area, temperature, concentration or pressure increase, and when a catalyst is added
Repulsion	electrostatic force that repels atoms or molecules with the same charge
Solution	mixture of two or more substances where one is dissolved in the other (particles cannot be seen)
Speed	change in position or distance over time, $v = \frac{\Delta d}{\Delta t}$
Starch	large carbohydrate that stores energy in plants, especially in bulbs, roots, and seeds
Test Tube	thin glass tube closed at one end, holds small volumes of solutions for experiments
Thermometer	device that measures temperature, typically a narrow, sealed glass tube with a bulb of mercury
Vapor Pressure	the slight pressure that results from the evaporation of a liquid into a gas, and the condensation of that gas back into a liquid
Variation	differences in genetic information among individuals of a population
Water Bath	container of water used to heat other containers (e.g. test tubes) in experiments
Wavelength	distance between successive crests of a wave
Weight	force gravity exerts on an object, equal to the mass of the object multiplied by the acceleration due to gravity, $F_w = mg$