

## Facts You Should Know for the ACT Science Section

Updated for  
Spring 2026!

### Experimental Design

- Scientific method – testing a hypothesis through experimentation
- Independent variable (what the scientist controls) vs Dependent variables (what the scientist measures/observes)
- Control groups and holding other variables constant (aka “controlling for a variable”)
- Placebo – a harmless substance (aka sugar pill) used for participants in control group
- Blind and double-blind studies
- Common conversions in metric system (1000 mm = 100 cm = 1 m = 1000 km)
- “Lab words” to know: tare, balance, graduated cylinder, filter, distill

### Biology

- Animal Cell Structure (cell membrane, nucleus, ribosomes, mitochondria, lysosomes)
- Plant Cell Structure (cell wall, nucleus, chloroplast)
- Photosynthesis - plants use light, water, and CO<sub>2</sub> and produce glucose and O<sub>2</sub>
- Cellular Respiration - cells, esp. mitochondria, convert O<sub>2</sub> and glucose into H<sub>2</sub>O, CO<sub>2</sub>, and energy in the form of ATP
- **Amino Acids = proteins; Glucose (Carbohydrates) = sugars; Lipids = fats\*\***
- Saturated fats are solid at room temperature
- Osmosis – the movement of water across a semipermeable membrane
- Genetics (Punnett squares, dominant vs recessive, alleles, Women have XX, Men have XY)
- DNA – double helix structure, stands for Deoxyribonucleic Acid, contains the nucleic acids Adenine, Thymine, Cytosine, and Guanine
- Mitosis = asexual cell reproduction; Meiosis = sexual cell reproduction that produces gametes
- Genetic mutation
- Systems in the human body (endocrine system, nervous system, digestive system, etc.)
- Neurons – brain cells that transmit electrical and chemical signals
- Endotherm = warm-blooded; Ectotherm = cold-blooded
- Vertebrates = organisms with a backbone; Invertebrates = organisms without a backbone
- **Crustaceans = aquatic organisms characterized by a hard, jointed exoskeleton, two pairs of antennae, and mandibles for feeding (crabs, lobsters, shrimp, etc)\*\***

### Ecology

- Greenhouse Effect; Role of CO<sub>2</sub> and CH<sub>4</sub> in global warming
- Erosion
- Amoebas – single-celled microscopic organisms known for their ability to change shape
- Natural selection – traits that allow organisms to survive and reproduce will become more common
- Fossil record – preserved remains of ancient life, placed in the order in which they appear in rock layers
- Popular research methods: how bacteria are grown and counted in a lab, the transect method

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## Chemistry

- Density=mass/volume; **Density of water = 1 g/cm<sup>3</sup> = 1 g/mL\*\***
- **pH Scale (0-6=acid; 7=neutral; 8-14=base); more protons = more acidic\*\***
- Recognize the abbreviations for common elements and compounds (O, C, H, N, Fe, H<sub>2</sub>O, H<sub>2</sub>, CH<sub>4</sub>, NH<sub>4</sub>, OH<sup>-</sup>, NaCl, etc.)
- Atomic structure (protons, neutrons, electrons)
- Solute = what is dissolved; Solvent = the medium it is dissolved in; Solution = solute + solvent
- How to read a molecular diagram
- **How to read and balance a chemical equation, including with ions\*\***
- Cations = positive; Anions = negative
- Molar mass (the sum of the atomic masses of each atom) given in g/mol
- Avogadro's Number (the number of molecules in one mole of a substance)
- States of matter (solid, liquid, gas, plasma)
- How to read a phase change diagram
- Boiling point of water = 100°C; Freezing point of water = 0°C
- Exothermic vs. Endothermic (Combustion is an exothermic reaction)

Exothermic	Reaction gives off heat	Environment gets warmer
Endothermic	Reaction takes in heat	Environment gets cooler

## Physics

- Free body diagrams
- Forces (gravity, tension, centripetal, friction, buoyancy, thrust, normal)
- Potential Energy (stored in the form of height or compression) vs Kinetic Energy (motion)
- Wavelength and frequency (reciprocal relationship)
- V=IR (Voltage is in volts, Current is in Amps, and Resistance is in Ohms Ω)
- Magnetism (opposite charges attract and like charges repel)
- Electromagnetic radiation spectrum - radio waves, microwaves, infrared, visible light, ultraviolet, X-rays, and gamma rays (listed from longest to shortest wavelength)
- Terrestrial Planets vs. Gas Giants
- Solar System (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and sometimes Pluto)
- Popular research methods: free fall tower, Atwood machine, photocell, the double slit experiment

**\*\* Reported on the February 2026 ACT**