

Facts You Should Know for the ACT Science Section

Experimental Design

- Independent vs Dependent Variables
- Control Groups
- Holding other variables constant (aka “controlling for a variable”)
- 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)
- Plant Cell Structure (cell wall, nucleus, chloroplast)
- Photosynthesis (plants use light, water, and CO₂ and produce glucose and O₂)
- Cellular Respiration (cells convert O₂ and glucose into H₂O, CO₂, and energy in the form of ATP)
- Greenhouse Effect
- Erosion
- Popular research methods: how bacteria are grown and counted in a lab, the transect method
- Genetics (Punnett squares, Women have XX, Men have XY)
- Systems in the human body (endocrine system, nervous system, digestive system, etc.)

Chemistry

- Density/Buoyancy
- pH Scale (0-6=acid; 7=neutral; 8-14=base)
- Recognize the abbreviations for common elements and compounds (O, C, H, N, Fe, H₂O, H₂, CH₄, NH₄, OH⁻, NaCl, etc.)
- Atomic structure (protons, neutrons, electrons)
- How to read a molecular diagram
- How to read a phase change diagram
- Exothermic vs. Endothermic

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

Physics

- Free body diagrams, including friction and normal force.
- Gravity
- V=IR (Voltage is in volts, Current is in Amps, and Resistance is in Ohms Ω)
- Terrestrial Planets vs. Gas Giants, Solar System (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus)
- Popular research methods: free fall tower, Atwood machine, photocell, the double slit experiment