# Appendix 1: Science H—Weekly Subject List

| Week | Subject |
|---|---|
| 1 | What is Chemistry, parts of an atom, atomic structure, orbitals, elements, isotopes, atomic models, periodic table |
| 2 | metals, nonmetals, metalloids, isotopes, valence electrons, solids, liquids, gases (volume, density, boiling, melting), kinetic molecular theory of gases, states of matter, changing state, Brownian motion |
| 3 | heat expanding particles, density, changing states, melting, evaporating, condensing, freezing, temperature |
| 4 | heating curves, temp in changes of state, latent heat, pressure, atmosphere, liquid, Combined gas law (volume, pressure, temperature), Avogadro's theory |
| 5 | buoyancy, barometers, pressure in gas, gas pressure, volume, temperature, introduction to bonding |
| 6 | ionic compounds, covalent compounds, mixtures, solutions, dissolving |
| 7 | reactants, products, signs of chemical reactions, chemical equations, balancing, ionization, acids, bases |
| 8 | strength and concentrations of acids/base, pH, uses, acid rain, types of reactions, endo/exothermic, molar mass, stoichiometry, rate of reactions, equilibrium |
| 9 | radioactive decay, radioactive decay, types of nuclear radiation, types of nuclear radiation, nuclear equations |
| 10 | fission vs fusion, nuclear energy, half-life, background radiation, hazards, beneficial uses of radiation, medicine |
| 11 | electrochemistry, anodes and cathodes, organic chemistry, biochemistry, significant figures, charts, reading patterns in charts |
| 12 | mathematical models in charts, SI units, speed, calculating speed, measuring speed, position-time graphs, vectors, velocity, acceleration, velocity-time graphs |
| 13 | force, types of force, unbalanced forces, action-reaction, resultant forces, resolving forces, mass and weight, moments, center of mass |
| 14 | simple machines, F=ma, investigating acceleration, momentum, elastic and inelastic collisions |
| 15 | changing momentum, stopping distance, car safety features, braking distance and energy, terminal velocity, static electricity, static attract and repel |
| 16 | induction, using static, lightning, electric fields, conductors |
| 17 | magnets, magnetic fields, magnetic compasses, Earth's magnetic field, electromagnetism |
| 18 | using electromagnets, motor effect, electric motor, electromagnetic induction |
| 19 | generators, power stations, transformers, electricity to homes, force fields, law of gravity |
| 20 | circular motion, solar system (focus on gravity), Moon (focus on gravity), orbits, energy, gravitational potential, mass |
| 21 | Newton and gravity, energy, energy stores, renewable resources, non-renewable resources |
| 22 | climate change, trends in energy use, efficiency, types of potential energy (elastic, springs), deformations (tension and compression) |
| 23 | pressurized potential energy, chemical potential energy, fuel, batteries, energy in food, nuclear potential energy, electrical energy, energy efficiency, batteries |
| 24 | kinetic and potential energy, conservation of energy, energy transfer by force, energy and power, energy efficiency |
| 25 | kinetic energy, machines using force, F=ma, exponential kinetic energy, thermal energy, internal energy, |

| Week | Subject |
|---|---|
| 26 | specific heat capacity, history of heat, heat energy and electricity being used by machines, Emmy Noether, conservation of energy |
| 27 | energy transfers, heat transfers, radiation, investigating radiation, conduction, insulators, convection, thermals |
| 28 | energy-saving homes, current electricity, circuits, series and parallel circuit, current/voltage/resistance |
| 29 | series and parallel circuit rules, charge, resistance in wires, resistors, current and voltage calculations |
| 30 | current and voltage graphs, power, calculating energy, light-dependent resistors, thermistors, sensor circuits |
| 31 | DC/AC, wiring, breakers, shocks, appliances, home energy, wasted energy, power transmission, sound waves |
| 32 | oscilloscopes, wave parts and equations, hearing sounds, speed of waves, speed of sound, ultrasound, sonar |
| 33 | seismic waves, wave interference, light, comparing sound and light, electromagnetic waves as energy |
| 34 | visible light, color reflection and absorption, pinhole camera, reflection, refraction, investigating light, total internal reflection |
| 35 | lenses, waves and refraction, refractive index in materials, converging and diverging lenses, correcting vision, converging and diverging ray diagrams |
| 36 | hazardous radiation, using light from stars to classify stars, redshift in light from stars, expanding universe, radio waves, speakers |