

What your student will study in Science 10

What the course covers

Atomic structure and the periodic table

Your student will learn how scientists discovered the structure of atoms, including the work of Dalton, Thomson, Rutherford and Bohr. The course outlines the role of evidence in the development of the atomic model and explores how elements combine to form compounds. Your student will outline the role of evidence in the development of the atomic model consisting of protons, neutrons, and electrons. This foundation helps explain why materials behave the way they do. [See the curriculum.](#)

Naming and classifying compounds

Your student will learn the International Union of Pure and Applied Chemistry (IUPAC) system for naming ionic compounds, molecular compounds and common acids such as sulfuric, hydrochloric and nitric acid. The course teaches how to classify compounds by their properties: conductivity, pH, solubility and physical state. Your student will predict whether an ionic compound dissolves in water using a solubility chart, and will relate the structure of molecules (such as water's polar nature) to their properties and how they transfer energy. [See the curriculum.](#)

Chemical reactions and energy

Your student will identify and classify five types of chemical reactions: formation (synthesis), decomposition, hydrocarbon combustion, single replacement and double replacement. The course covers evidence of chemical change such as energy release or absorption, gas or precipitate formation, colour or odour change, and temperature change. Your student will distinguish between endothermic reactions (which absorb energy, like photosynthesis) and exothermic reactions (which release energy, like combustion). The course includes significant reactions in living systems (photosynthesis and respiration) and reactions that affect the environment (combustion and decomposition of waste). [See the curriculum.](#)

Balanced equations and the mole concept

Your student will translate word equations into balanced chemical equations and predict products of chemical reactions. The course introduces the mole as a counting unit: one mole contains 6.02×10^{23} particles (Avogadro's number). Your student will use the mole concept to calculate quantities of substances and will interpret balanced equations in terms of moles, connecting this to the law of conservation of mass, which states that matter is neither created nor destroyed in a chemical reaction. [See the curriculum.](#)

Laboratory skills and safety

Your student will design and conduct experiments that control variables, such as testing whether different solutions are acids, bases or neutral. The course focuses on designing experiments, identifying and controlling variables, and selecting appropriate instruments for collecting evidence. Your student will evaluate and select appropriate instruments for collecting evidence and appropriate processes for problem solving and inquiry. The course teaches students to evaluate and select appropriate instruments for collecting evidence in investigations. [See the curriculum: 1, 2, 3.](#)

Communication and problem-solving

Your student will represent large and small numbers using scientific notation, use SI units and IUPAC nomenclature, and classify matter and name compounds using the periodic table. The course develops the ability to ask new questions that arise from what was learned, such as how ancient peoples discovered how to separate metals from their ores. [See the curriculum: 1, 2.](#)

How the course is assessed

Science 10 covers atomic structure, chemical nomenclature, chemical reactions, and the mole concept as part of Unit A: Energy & Matter in Chemical Change. Laboratory work includes experiments that demonstrate conservation of mass, classify compounds by their properties and predict products of chemical reactions. Assignments assess knowledge of atomic theory, classification of matter, naming compounds and balancing equations. The course emphasizes both written communication (word equations, balanced equations, explanations of chemical change) and practical demonstration of safe laboratory technique. [See the source](#).

How to support study at home

Work through naming compounds together. Ask your student to name a compound you choose from a household product (vinegar contains acetic acid, baking soda is sodium bicarbonate, salt is sodium chloride). Have them explain which elements are in it and why they combine in that ratio. This builds fluency with the periodic table and IUPAC rules. [See the curriculum](#).

Discuss chemical reactions in cooking and cleaning. When baking, ask your student to explain what happens to baking powder or baking soda in the heat (a decomposition reaction that produces carbon dioxide gas, which makes the cake rise). When discussing household processes, talk about how chemical reactions produce useful substances, such as baking powder in baking. These everyday examples help your student see that the reactions they study in class happen constantly. [See the curriculum](#).

Ask about evidence of chemical change. When your student describes a reaction from the lab, ask them to identify the evidence: Did the temperature change? Did a gas form? Did a colour change? Did a precipitate form? This reinforces the evidence for chemical changes, such as energy change, formation of a gas or precipitate, or colour or odour change. [See the curriculum](#).

Help your student check balanced equations. Write out a simple balanced equation (such as $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$) and ask them to count the atoms on each side to verify it balances. Ask them to explain what the numbers mean in terms of moles of molecules. This builds confidence with the mole concept and conservation of mass. [See the curriculum](#).

Review safe handling of household chemicals. Look at the labels on cleaning products, batteries and other chemicals at home. Ask your student to identify the WHMIS symbols (flammable, corrosive, health hazard, reactive) and explain what each one means. Discuss why certain chemicals should never be mixed (such as ammonia and bleach). [See the curriculum](#).

Encourage questions about chemistry careers. Ask your student whether they have noticed chemistry in any part-time jobs or volunteer work they do or are considering. Chemical engineering, cosmetology, food processing and laboratory work all depend on the concepts they are learning. [See the curriculum](#).

Note: 86 learning outcome blocks were left out to fit the 6000-token curriculum budget for this kind of material. Use "Split into parts" to generate one document per organizing idea.