

Grade Nine Science Unit One Review Checklist

By the end of our first unit (Atoms, Elements, and Compounds), you should be able to...

- demonstrate a knowledge of WHMIS standards by using proper techniques for handling and disposing of lab materials
- define matter
- distinguish between physical and chemical properties, and list examples of physical and chemical properties, including...
 - Physical - (i) colour (ii) malleability (iii) electrical conductivity (iv) magnetism (v) luster (vi) density (vii) melting/boiling points (viii) texture
 - Chemical - (i) combustibility (ii) reactivity
- list examples of physical and chemical changes, including...
 - Physical - i) change of state ii) cutting iii) dissolving
 - Chemical - i) corrosion ii) fruit ripening iii) combustion
- list evidence that a chemical change may have occurred, Including...
 - (i) heat is produced or absorbed (ii) a new color appears (iii) a precipitate is formed (iv) a gas is produced (v) process is difficult to reverse
- recognize that during a chemical change, elements are conserved but compounds are not
- distinguish between a theory and a law
- identify major changes in atomic theory up to and including the Bohr model
- describe the contribution of...(i) Early Greeks (Empedocles, Democritus, Aristotle) (ii) Dalton (iii) Thomson (iv) Rutherford and (v) Bohr to our knowledge of atoms
- describe Rutherford's experiment to test Thomson's atomic model
- define atom, and distinguish among protons, neutrons, and electrons in terms of their: (i) charge (ii) relative mass, and (iii) location in the atom
- define element, and identify / write chemical symbols for common elements. Include: (307-16) (i) Hydrogen, (ii) Sodium, (iii) Potassium, (iv) Magnesium, (v) Calcium, (vi) Iron, (vii) Nickel, (viii) Copper, (ix) Zinc, (x) Carbon, (xi) Nitrogen, (xii) Oxygen, (xiii) Neon, (xiv) Helium, (xv) Chlorine, (xvi) Silicon, (xvii) Silver, (xviii) Gold, (xix) Mercury, and (xx) Lead

- identify each element symbol as either an uppercase symbol or an uppercase letter followed by a lower case letter
- describe Mendeleev's contribution to the development of the modern periodic table
- distinguish between atomic number and atomic mass, and using atomic mass and atomic number for an element, determine its number of protons, electrons, and neutrons
- define energy level, and identify the maximum number of electrons which exist in the first three energy levels
- make comparisons of energy level diagrams for elements from the same family
- define valence energy level and valence electron
- draw Bohr-Rutherford diagrams for elements 1 to 18
- define period, family, and identify the following groups on the Periodic Table...
 - (i) metals, (ii) non-metals, (iii) metalloids, (iv) alkali metals, (v) alkaline earth metals
 - (vi) halogens, (vii) noble gases, and (viii) transition metals
- provide examples of common properties which a family of elements share, including...
 - (i) noble gases, (ii) alkali metals, (iii) halogens, and alkaline earths
- list properties of metals, being (i) shiny, (ii) ductile and malleable, (iii) conduct electricity, and they (iv) conduct heat
- list properties of non-metal elements. Include: (i) dull, (ii) non-ductile and nonmalleable, (iii) do not conduct electricity, and (iv) do not conduct heat well
- define compound, and identify whether a simple compound is ionic or molecular (covalent)
- list chemical formulas for some common chemical ionic compounds. Include: (i) table salt or sodium chloride (NaCl), (ii) calcium carbonate (CaCO₃), (iii) sodium sulfite (Na₂SO₄), (iv) Sodium hydroxide (NaOH),
- list chemical formulas for some common chemical molecular (covalent) compounds. Include: (i) sucrose or table sugar (C₁₂H₂₂O₁₁), (ii) carbon dioxide (CO₂), (iii) methane (CH₄), and (iv) water (H₂O)
- name simple molecular (covalent) compounds