

Chemistry

Year 8

(68 hrs, 2 hrs/week)

Table of contents	
1	<p>Repetition of the most important topics from the course of chemistry of Year 7 The most important concepts of chemistry. Simple and compound substances (oxygen, water). Decomposition and combination reactions. Relative molecular mass, its calculation using a chemical formula. Mass fraction of an element in a compound substance.</p>
2	<p>Atom structure. Periodic law and periodic table Brief history of the attempts to classify chemical elements. Concept of alkali, inert elements, and halogens. Atom structure. Mendeleev's periodic law (modern interpretation). Periodic table and its structure. Features of chemical elements No. 1–20 by their place in the periodic system and atom structure. Meaning of a periodic law</p>
3	<p>Chemical bond and structure of substances Nature of a chemical bond. Electronegativity of atoms of chemical elements. Covalent bond and its formation. Polar and non-polar covalent bond. Electron formulas of molecules. Ions. Ionic bond and its formation. Crystal lattice. Atomic, molecular, and ion crystals. Dependence of physical features of substances on the types of crystal lattice</p>
4	<p>Quantity of substance. Calculation using chemical formulas Quantity of substance. Mole as a unit of quantity of substance. Avogadro constant. Molar mass. Avogadro's law. Molar volume of gases. Gas specific gravity.</p>
5	<p>Main classes of inorganic compounds Classifications of inorganic compounds, their composition and nomenclature. Physical features of oxides. Physical features of acids. Safety rules during the work with acids. Physical features of bases. Chemical features of alkali. Chemical features of insoluble bases. Chemical features of amphoteric hydroxides. Physical features of normal salts. Chemical features of normal salts. Genetic bonds between the main classes of non-organic compounds. Spreading in nature and the use of oxides, acids, bases, and normal salts. Impact on the environment and the health of human.</p>
<p>Expected results</p> <p>Pupil:</p> <ul style="list-style-type: none"> gives examples of: formulas and names of simple (metal and non-metals) and compound (oxides, bases, and acids) substances; reaction equations; and decomposition and combination reactions; 	



- calculates relative molecular mass of a substance using its formula, and mass fraction of an element in the compound substance;
- gives examples of alkali, inert elements, and halogens;
- gives examples of compounds with covalent (polar and non-polar) and ionic chemical bonds, atomic, molecular and ion crystal lattice;
- makes up electron formulas of molecules;
- defines the type of a chemical bond in typical cases, and the polarity of covalent bond
- finds interrelation between the physical units (mass, molar mass, volume, molar volume, and quantity of substances);
- calculates the number of particles (atoms, molecules, and ions) in a certain quantity of substance, mass, and volume; molar mass, mass and quantity of substance; volume of this mass of quantity of gas under normal conditions; relative density of gas using the other gas, selecting and justifying the method of solving;
- gives examples of base, acid, and alkali amphoteric acids, oxygen-containing and non-oxygen, one-, two- and three-atomic acids, soluble and insoluble bases, amphoteric hydroxides, and normal salts;
- composes chemical formulas of oxides, bases, amphoteric hydroxides (Aluminum and Zinc), acids, normal salts; and reaction equation;
- compares the base, acid, and amphoteric oxides, alkali, and insoluble bases by their chemical features;
- sets genetic bonds between the simple and compound substances, and main classes of inorganic substances;
- uses the chemical reaction equation to find out the mass, the quantity of substance and gas volume using the known mass, quantity of substance, volume of one of reagents or reaction products, by selecting and justifying the method of solving.