

- Differentiates materials / objects / organisms / phenomena / processes, based on, properties / characteristics, such as autotrophic and heterotrophic nutrition, biodegradable and non-biodegradable substances, various types of reactions, strong and weak acids and bases, acidic, basic and neutral salts, real and virtual images, etc.
- Classifies materials / objects / organisms / phenomena / processes, based on, properties / characteristics, such as metals and non-metals on the basis of their physical and chemical properties, acids and bases on the basis of their chemical properties, etc
- Plans and conducts investigations / experiments to arrive at and verify the facts, principles, phenomena or to seek answers to queries on their own, such as investigates conditions necessary for rusting, tests the conductivity of various solutions, compares the foaming capacity of different types of soap samples, verifies laws of reflection and refraction of light, ohm's law, do variegated leaves perform photosynthesis? Which gas is evolved during fermentation? Why plants shoot moves towards light?
- Relates processes and phenomena with causes / effects, such as hormones with their functions, tooth decay with pH of saliva, growth of plants with pH of the soil, survival of aquatic life with pH of water, blue colour of sky with scattering of light, deflection of compass needle due to magnetic effect of electric current, etc.
- Explains processes and phenomena, such as nutrition in human beings and plants, transportation in plants and animals, extraction of metals from ores, placement of elements in modern periodic table, displacement of metals from their salt solutions on the basis of reactivity series, working of electric motor and generator, twinkling of stars, advance sunrise and delayed sunset, formation of rainbow, etc.
- Draws labelled diagrams / flow charts / concept map /graphs, such as digestive, respiratory, circulatory, excretory and reproductive systems, electrolysis of water, electron dot structure of atoms and molecules, flow chart for extraction of metals from ores, ray diagrams, magnetic field lines, etc.
- Analyses and interprets data / graph / figure, such as melting and boiling points of substances to differentiate between covalent and ionic compounds, pH of solutions to predict the nature of substances, v-i graphs, ray diagrams, etc.
- Calculates using the data given, such as number of atoms in reactants and products to balance a chemical equation, resistance of a system of resistors, power of a lens, electric power, etc.
- Uses scientific conventions to represent units of various quantities / symbols / formulae / equations, such as balanced chemical equation by using symbols and physical states of substances, sign convention in optics, si units, etc.
- Measures physical quantities using appropriate apparatus / instruments /devices, such as ph of substances using different indicators, electric current and potential difference using ammeter and voltmeter, etc.
- Applies learning to hypothetical situations, such as what happens if all herbivores removed from an ecosystem? What will happen if all non-renewable sources of energy are exhausted?
- Applies scientific concepts in daily life and solving problems, such as takes precautions to prevent sexually transmitted infections, uses appropriate electrical plugs (5 /15a) for different electrical devices, uses vegetative propagation to develop saplings in gardening, performs exercise to keep in good health, avoids using appliances responsible for ozone layer depletion, applies concept of decomposition reaction of baking soda to make spongy cakes, etc

- Derives formulae / equations / laws, such as equivalent resistance of resistors in series and parallel, etc.
- Draws conclusion, such as traits / features are inherited through genes present on chromosomes, a new species originates through evolutionary processes, water is made up of hydrogen and oxygen, properties of elements vary periodically along the groups and periods in periodic table, potential difference across a metal conductor is proportional to the electric current through it, etc.
- Takes initiative to know about scientific discoveries / inventions, such as Mendel's contribution in understanding the concept of inheritance, Dobereiner for discovering triads of elements, Mendeleev for the development of the periodic table of elements, Oersted discovery that electricity and magnetism are related, discovery of relation between potential difference across a metal conductor and the electric current through it by ohm, etc.
- Exhibits creativity in designing models using eco-friendly resources, such as working model of respiratory, digestive and excretory systems, soda acid fire extinguisher, periodic table, micelles formation, diamond / graphite / Buckminster fullerene, human eye, electric motor and generator, etc
- Exhibits values of honesty / objectivity / rational thinking / freedom from myth / superstitious beliefs while taking decisions, respect for life, etc. Such as reports and records experimental data accurately, says no to consumption of alcohol and sensitizes others about its effect on physical and mental health, motivates for organ donation, prevents pre-natal sex determination, etc.
- Communicates the findings and conclusions effectively, such as those of experiment / activity / project orally and in written form using appropriate figures / tables / graphs / digital form, etc.
- Makes efforts to conserve environment realizing the inter- dependency and interrelationship in the biotic and abiotic factors of environment, such as appreciates and promotes segregation of biodegradable and non - biodegradable wastes, takes steps to promote sustainable management of resources in day to day life, advocates use of fuels which produces less pollutants, uses energy efficient electric devices, uses fossil fuels judiciously, etc.