

Class 9

Section I

Suggested pedagogical process

The learners maybe provided with opportunities individually /in groups and encouraged to -

Observe, group / classify materials, such as mixtures, based on their properties, viz. Solubility, passage of light, etc. By performing various activities. Based on the observations, a discussion may be facilitated to help arrive at the appropriate conclusions. Students with visual impairment or low vision may be motivated to observe solubility of the materials by touching.

Design and carry out activities, for example, “tug of war” to understand balanced and unbalanced forces. They may be encouraged to experiment by applying forces (equal and unequal) on an object in same and opposite direction, followed by peer group discussion to generalise.

Study the daily life experience, such as the cause behind cooling of water in earthen pots. They may be encouraged to measure and compare the temperatures of water both in earthen pot and metal containers, thereby helping them to relate process of evaporation with cooling effect. Students with visual impairment or low vision may be encouraged to feel the difference in temperature by touching the surfaces of the containers

Conduct survey to understand the process of spread of diseases. They may be encouraged to visit hospitals / dispensaries, collect data from doctors and nurses about various diseases. They can prepare a report on spread, causes, prevention and cure of diseases. They may share their findings with the community through role plays / skits and also campaign for prevention.

Discuss their observations / ideas / learning through flow charts / concept maps / graphs.

Gather data for calculating different physical quantities, such as distance, displacement, velocity, which can be shared and discussed in groups /with peers. Rubrics can be used to assess the conversion of units and reporting results.

Collect and analyse wide variety of graphs from newspapers, magazines or internet. They may be encouraged to draw, analyse and interpret the graphs (for example, distance-time, speed-time or acceleration-time graphs of motion of a vehicle on straight road)

Write formulae of simple compounds, chemical equations, etc. Using play way methods such as a game of cards.

Select and use appropriate devices for measuring physical quantities. They may be encouraged to find the minimum and maximum value that can be measured by an instrument and note down the readings correctly.

Collect information from books, e-books, magazines, internet, etc. To appreciate the efforts of scientists made over the time, for example various models of atoms, discovery of microscope and showcase it in the form of a project / role play.

Observe various technological devices / innovative exhibits such as waste management kits, water filtration system, using low-cost / no-cost eco- friendly materials, develop them and showcase it in science exhibitions / clubs / parent-teacher meets.

Share / discuss their beliefs and views regarding myths / taboos / superstitions by initiating an open-ended debate, leading to the alignment of their beliefs to the scientifically proven facts. They may also be involved in awareness campaigns in community.

Section II	
Learning Outcomes of NCERT	Measuring the LOs
The learner -	
Differentiates materials / objects / organisms / phenomena / processes, based on such as prokaryote and eukaryote, plant cell and animal cell, diffusion and osmosis, simple and complex tissues, distance and displacement, speed and velocity, balanced and unbalanced forces, element, compound and mixture, solution, suspension and colloid, isobars and isotopes, etc.	Explains properties / characteristics in order to differentiate materials / objects / organisms / phenomena / processes
Classifies materials / objects / organisms / phenomena / processes, based on, properties / characteristics, such as classification of plants, animals under various hierarchical sub-groups, natural resources, classification of matter based on their states (solid / liquid / gas) and composition (element / compound / mixture), etc.	Describes and interprets properties / characteristics in order to classify materials / objects / organisms / phenomena / processes
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 how does speed of an object change? How objects float / sink when placed on surface of liquid? Is there any change in mass when chemical reaction takes place? What is the effect of heat on state of substances? What is the effect of compression on different states of matter? Where are stomata present in different types of leaves? Where are growing tissues present in plants?	Plans and conducts investigations / experiments on their own, in order to arrive at facts and in order to verify the principles / phenomena, or in order to seek answers to queries.
Relates processes and phenomena with causes / effects, such as symptoms with diseases / causal agents, tissues with their functions, production with use of fertilizers, process of evaporation with cooling effect, various processes of separation with the physical and chemical properties of the substances, production of sound with vibrations of source, etc.	Examines and explains processes and phenomena in order to relate them with causes and effects.
Explains processes and phenomena, such as function of different organelles, spread of diseases and their prevention, effect of force on the state of motion of objects, action and reaction, revolution of planets and satellites, conservation laws, principle of separation of different gases from air, melting / boiling / freezing, how bats use ultrasound to catch prey, etc.	Explains processes and phenomena in order to relate to science behind the phenomena / processes and develop a keen interest in the science in daily life.
Calculates using the data given, such as distance, velocity, speed, frequency, work done, number of moles in a given mass of substance, concentration	Calculates using the data given, in order to show measurability of scientific

of solution in terms of mass by mass percentage of substances, conversion of Celsius scale to kelvin scale and vice versa, number of neutrons in an atom from atomic number and mass number, speed of sound, kinetic and potential energies of an object, boiling points of liquids to predict the order of their separation from the mixture, etc.	postulates and applications of scientific measurement units.
Draws labelled diagrams / flow charts / concept map /graphs , such as biogeochemical cycles, cell organelles and tissues, human ear, distance-time and speed-time graphs, distribution of electrons in different orbits, process of distillation / sublimation, etc.	Draws labelled diagrams /flow charts /concept map /graphs to demonstrate knowledge of how the process /structure /relationship works and also to demonstrate the application of different forms of illustrations.
Analyses and interprets graphs / figures etc., such as distance-time and velocity-time graphs, computing distance / speed / acceleration of objects in motion, properties of components of a mixture to identify the appropriate method of separation, crop yield after application of fertilizers, etc.	Analyses graphs /figures /etc. in order to interpret them.
Uses scientific conventions /symbols / equations to represent various quantities / elements /units , such as SI units, symbols of elements, formulae of simple compounds, chemical equations, etc.	Uses scientific conventions / symbols /equations in order to represent various quantities /elements /units.
Measures physical quantities using appropriate apparatus /instruments / devices , such as weight and mass of an object using spring balance, mass using a physical balance, time period of a simple pendulum, volume of liquid using measuring cylinder, temperature using thermometer, etc.	Selects and uses appropriate apparatus /instruments / devices in order to measure physical quantities.
Applies learning to hypothetical situations , such as weight of an object at moon, weight of an object at equator and poles, life on other planets, etc.	Applies learning to given hypothetical situations in order to solve problems /give possible solutions.
Applies scientific concepts in daily life and solving problems , such as separation of mixtures, uses safety belts in automobiles, covers walls of large rooms with sound absorbent materials, follows intercropping and crop rotation, takes preventive measures to control disease causing agents, etc.	Applies learning of scientific concepts in daily life /real life situations in order to solve problems /give solutions /take preventive measures /etc.
Derives formulae / equations / laws , such as mathematical expression for second law of motion, law of conservation of momentum, expression for force of gravity, equations of motion from velocity-time graphs, etc.	Derives formulae /equations /laws in order to demonstrate mathematical thinking and understanding of scientific laws /concepts.
Draws conclusion , such as classification of life forms is related to evolution, deficiency of nutrients affects physiological processes in plants, matter is made up of particles, elements combine chemically in a fixed ratio	Analyses interdependencies in order to draw conclusions.

to form compounds, action and reaction act on two different bodies, etc.	
Describes scientific discoveries / inventions , such as discovery of various atomic models, discovery of cell with invention of microscope, experiments of Lavoisier and Priestley, beliefs regarding motion, discovery of real cause for peptic ulcers, Archimedes principle, classification of living things, etc.	Describes scientific discoveries /inventions in order to compare, contrast, and evaluate their usefulness, particularly in context of the age in which it was discovered /invented and its relevance today.
Designs models using eco-friendly resources , such as 3-d model of a cell, water purification system, stethoscope, etc.	Uses eco-friendly resources in order to design models.
Records & reports experimental data objectively and honestly. Exhibits values of honesty / objectivity / rational thinking / freedom from myths /superstitious beliefs while taking decisions, respect for life, etc. , such as records and reports experimental data exactly, sexually transmitted diseases are not spread by casual physical contact, vaccination is important for prevention of diseases, etc.	Records & reports experimental data objectively and honestly, in order to exhibit values of honesty /objectivity /rational thinking /respect for life and freedom from myths /superstitious /beliefs /etc. while taking decisions.
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.	Uses appropriate figures / tables /graphs /digital form, etc. and records findings of experiment / activity /project in order to communicate, both orally and in written form, the findings and conclusions effectively.
Applies the interdependency and interrelationship in the biotic and abiotic factors of environment to promote conservation of environment , such as organic farming, waste management, etc.	Applies the interdependency and interrelationship in the biotic and abiotic factors of environment in order to promote conservation of environment.

Section III**LEARNING OBJECTIVES MAPPED WITH LEARNING OUTCOMES ADAPTED BY CBSE**

Chapter no.	Learning Objectives	Learning Outcomes
1. Matter in Our Surroundings	Describe the physical properties of solids and illustrate their molecular arrangements.	Differentiates materials / objects / organisms / phenomena / processes, based on such as prokaryote and eukaryote, plant cell and animal cell, diffusion and osmosis, simple and complex tissues, distance and displacement, speed and velocity, balanced and unbalanced forces, element, compound and mixture, solution, suspension and colloid, isobars and isotopes, etc.
	Identify the distinguishing characteristics of liquids.	
	Classify matter into solids, liquids and gases based on characteristic properties of the particles in them.	Classifies materials / objects / organisms / phenomena / processes, based on, properties / characteristics, such as classification of plants, animals under various hierarchical sub-groups, natural resources, classification of matter based on their states (solid / liquid / gas) and composition (element / compound / mixture), etc.
	Identify the various processes during change of substances from one physical state to another and classify substances on this basis.	
	Demonstrate that matter is made up of tiny particles.	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 how does speed of an object change? How objects float / sink when placed on surface of liquid? Is there any change in mass when chemical reaction takes place? What is the effect of heat on state of substances? What is the effect of compression on different states of matter? Where are stomata present in different types of leaves? Where are growing tissues present in plants?
	Conclude that particles of matter continuously move during interaction between various forms and change in temperature changes the kinetic energy of particles.	
	Identify the characteristic features of gases and compare the three states of matter.	
	Describe the effect of change in temperature on the state of matter to explain why ice melts when heated	

1. Matter in Our Surroundings	Make inferences about the effect of temperature on the states of matter.	
	Postulate the reason for constancy of temperature during the change in states of matter.	
	Provide explanation for life situations that demonstrate effects of evaporation.	
	Infer that intermolecular space between particles of solids makes diffusion possible between matter.	Relates processes and phenomena with causes / effects , such as symptoms with diseases / causal agents, tissues with their functions, production with use of fertilizers, process of evaporation with cooling effect, various processes of separation with the physical and chemical properties of the substances, production of sound with vibrations of source, etc.
	Provide scientific explanation for diffusion in examples of gases and liquids witnessed in real life.	Explains processes and phenomena , such as function of different organelles, spread of diseases and their prevention, effect of force on the state of motion of objects, action and reaction, revolution of planets and satellites, conservation laws, principle of separation of different gases from air, melting / boiling / freezing, how bats use ultrasound to catch prey, etc.
	Explain situations that demonstrate factors affecting evaporation.	
	Explain the effect of change in temperature on states of matter.	Calculates using the data given , such as distance, velocity, speed, frequency, work done, number of moles in a given mass of substance, concentration of solution in terms of mass by mass percentage of substances, conversion of Celsius scale to kelvin scale and vice versa, number of neutrons in an atom from atomic number and mass number, speed of sound, kinetic and potential energies of an object, boiling points of liquids to predict the order of their separation from the mixture, etc.
	Relate the effect of pressure on different states of matter and its applications.	
	Conclude that particles of matter attract each other and depict the molecular arrangement of particles in the three states of matter, i.e., solids, liquids and gases.	
	Draws labelled diagrams / flow charts / concept map /graphs , such as biogeochemical cycles, cell organelles and tissues, human ear, distance-time and speed-time graphs, distribution of electrons in different orbits, process of distillation / sublimation, etc.	

<p>1. Matter in Our Surroundings</p>	<p>Hypothesize why the temperature remains same during the change in state</p>	<p>Measures physical quantities using appropriate apparatus /instruments / devices, such as weight and mass of an object using spring balance, mass using a physical balance, time period of a simple pendulum, volume of liquid using measuring cylinder, temperature using thermometer, etc.</p>
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Chapter no	Learning Objectives	Learning Outcomes
<p>2. Is Matter around Us Pure?</p>	<p>Differentiate between homogeneous and heterogeneous mixtures to classify types of mixtures based on their properties</p> <p>Classify homogenous and heterogenous mixtures into solutions, suspensions and colloids.</p> <p>Classify substances into elements and compounds.</p> <p>Differentiate between distillation and fractional distillation procedures.</p> <p>Differentiate between elements and compounds to classify different materials based on their physical and chemical properties.</p>	<p>Differentiates materials / objects / organisms / phenomena / processes, based on such as prokaryote and eukaryote, plant cell and animal cell, diffusion and osmosis, simple and complex tissues, distance and displacement, speed and velocity, balanced and unbalanced forces, element, compound and mixture, solution, suspension and colloid, isobars and isotopes, etc.</p>
<p>2. Is Matter around Us Pure?</p>	<p>Differentiate between homogeneous and heterogeneous mixtures.</p> <p>Classify different substances based on their physical properties as metals, non-metals and metalloids.</p> <p>Determine the effect of concentration of solution on its physical properties.</p>	<p>Classifies materials / objects / organisms / phenomena / processes, based on, properties / characteristics, such as classification of plants, animals under various hierarchical sub-groups, natural resources, classification of matter based on their states (solid / liquid / gas) and composition (element / compound / mixture), etc.</p> <p>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 how does speed of an object change? How objects float / sink when placed on surface of liquid? Is there any change in mass when chemical reaction takes place? What is the effect of heat on state of substances? What is the</p>

2. Is Matter around Us Pure?		effect of compression on different states of matter? Where are stomata present in different types of leaves? Where are growing tissues present in plants?
	Identify different processes to separate mixtures and apply them to separate various mixtures.	Relates processes and phenomena with causes / effects , such as symptoms with diseases / causal agents, tissues with their functions, production with use of fertilizers, process of evaporation with cooling effect, various processes of separation with the physical and chemical properties of the substances, production of sound with vibrations of source, etc.
	Examine the process of crystallization to separate (explain how) mixtures of solid and liquid	
	Identify mixtures from your surroundings based on their characteristic properties.	Explains processes and phenomena , such as function of different organelles, spread of diseases and their prevention, effect of force on the state of motion of objects, action and reaction, revolution of planets and satellites, conservation laws, principle of separation of different gases from air, melting / boiling / freezing, how bats use ultrasound to catch prey, etc.
	Identify the processes to separate various mixtures	
	State the underlying principle behind centrifugation process and locate its use.	
	Deduce the process of chromatography and identify mixtures that can be separated by the use of this procedure.	
	Explain the principle of chromatography and identify mixtures that can be separated through this process.	
	Elaborate the technique of fractional distillation to separate homogeneous (or miscible) liquids.	
	Explain the basis for use of separating funnel to separate miscible liquids.	
Describe the process of using fractional distillation to explain its use in separating gases from the air.		
	Deduce/ determine the concentration of solution to predict the colour of the solution formed by colouring substance and the solvent	Calculates using the data given , such as distance, velocity, speed, frequency, work done, number of moles in a given mass of substance, concentration of solution in terms of mass by mass percentage of substances, conversion of Celsius scale to kelvin

2. Is Matter around Us Pure?		scale and vice versa, number of neutrons in an atom from atomic number and mass number, speed of sound, kinetic and potential energies of an object, boiling points of liquids to predict the order of their separation from the mixture, etc.
	Recognize the basis of distillation and identify mixtures that can be separated through this.	Draws labelled diagrams / flow charts / concept map /graphs , such as biogeochemical cycles, cell organelles and tissues, human ear, distance-time and speed-time graphs, distribution of electrons in different orbits, process of distillation / sublimation, etc.
	Elaborate the technique of fractional distillation to explain the process of separation of homogeneous (or miscible) liquid solution	
	Explain the basis for use of separating funnel to separate miscible liquids.	
	Describe the process of using fractional distillation to explain its use in separating gases from the air.	
	Explain the process of crystallization	Analyses and interprets graphs / figures etc., such as distance-time and velocity-time graphs, computing distance / speed / acceleration of objects in motion, properties of components of a mixture to identify the appropriate method of separation, crop yield after application of fertilizers, etc.
	Recognize the basis of distillation and identify mixtures that can be separated through this.	
	Become conversant with the basis for separation and suggest procedures to separate mixtures of solids in real life situations.	Applies scientific concepts in daily life and solving problems , such as separation of mixtures, uses safety belts in automobiles, covers walls of large rooms with sound absorbent materials, follows intercropping and crop rotation, takes preventive measures to control disease causing agents, etc.
	Suggest procedures to separate mixtures of solids and liquids.	
	Identify situations where basic principle of evaporation is used to separate solids from liquids.	
Identify suitable processes of separation to separate mixtures in real life situations.		

2. Is Matter around Us Pure?	Differentiate between elements and compounds to classify different materials based on their physical and chemical properties.	Draws conclusion , such as classification of life forms is related to evolution, deficiency of nutrients affects physiological processes in plants, matter is made up of particles, elements combine chemically in a fixed ratio to form compounds, action and reaction act on two different bodies, etc.
	Elaborate the technique of fractional distillation to separate homogeneous (or miscible) liquids.	Designs models using eco-friendly resources , such as 3-d model of a cell, water purification system, stethoscope, etc.

Chapter no	Learning Objectives	Learning Outcomes
3. Atoms and Molecules	Identify ionic compounds whose formula unit mass can be calculated.	Differentiates materials / objects / organisms / phenomena / processes, based on such as prokaryote and eukaryote, plant cell and animal cell, diffusion and osmosis, simple and complex tissues, distance and displacement, speed and velocity, balanced and unbalanced forces, element, compound and mixture, solution, suspension and colloid, isobars and isotopes, etc.
	Apply the Law of Conservation of Mass to determine the mass of elements in a mixture.	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 how does speed of an object change? How objects float / sink when placed on surface of liquid? Is there any change in mass when chemical reaction takes place? What is the effect of heat on state of substances? What is the effect of compression on different states of matter? Where are stomata present in different types of leaves? Where are growing tissues present in plants?
	Calculate the mass ratio of atoms in a molecule to validate law of constant proportions	

3. Atoms and Molecules	Correlate the fact of invisibility of atoms to the size of atoms.	Explains processes and phenomena , such as function of different organelles, spread of diseases and their prevention, effect of force on the state of motion of objects, action and reaction, revolution of planets and satellites, conservation laws, principle of separation of different gases from air, melting / boiling / freezing, how bats use ultrasound to catch prey, etc.
	Determine the number of atoms present in an element on the basis of their atomicity.	Calculates using the data given , such as distance, velocity, speed, frequency, work done, number of moles in a given mass of substance, concentration of solution in terms of mass by mass percentage of substances, conversion of Celsius scale to kelvin scale and vice versa, number of neutrons in an atom from atomic number and mass number, speed of sound, kinetic and potential energies of an object, boiling points of liquids to predict the order of their separation from the mixture, etc.
	Apply the law of constant proportions to calculate the mass ratio of atoms in a molecule.	
	Calculate the relative molecular mass of commonly known chemical compounds.	
	Calculate the number of moles, mass, atoms and molecules using Avogadro's number.	
	List atomic symbols of commonly known elements as per IUPAC	Uses scientific conventions /symbols / equations to represent various quantities / elements /units , such as SI units, symbols of elements, formulae of simple compounds, chemical equations, etc.
	Recognise that different elements have different atomic mass.	
	Write chemical formulae using symbols & valences.	
	Apply the Law of Conservation of Mass to determine the mass of elements in a mixture.	Derives formulae / equations / laws , such as mathematical expression for second law of motion, law of conservation of momentum, expression for force of gravity, equations of motion from velocity-time graphs, etc.
	Apply the Law of Constant Proportions to estimate the amount of elements required in a chemical substance and identify postulates of Dalton's atomic theory.	Describes scientific discoveries / inventions , such as discovery of various atomic models, discovery of cell with invention of microscope, experiments of Lavoisier and Priestley, beliefs regarding motion, discovery of real cause for peptic ulcers, Archimedes principle, classification of living things, etc.
Recall atomic masses of a few elements to reinforce the idea of different atomic mass for different elements		

Chapter no.	Learning Objectives	Learning Outcomes
4. Structure of the Atom	Know the different constituents of an atom and differentiate between electrons and protons.	Differentiates materials / objects / organisms / phenomena / processes, based on such as prokaryote and eukaryote, plant cell and animal cell, diffusion and osmosis, simple and complex tissues, distance and displacement, speed and velocity, balanced and unbalanced forces, element, compound and mixture, solution, suspension and colloid, isobars and isotopes, etc.
	Identify isobars on the basis of scientific notation of their atoms.	Relates processes and phenomena with causes / effects, such as symptoms with diseases / causal agents, tissues with their functions, production with use of fertilizers, process of evaporation with cooling effect, various processes of separation with the physical and chemical properties of the substances, production of sound with vibrations of source, etc.
	Find the valency of elements on the basis of their electronic configuration and relate inertness and reactivity of elements.	
4. Structure of the Atom	Calculate the number of electrons distributed in different orbits(shells) according to Bohr and Bury rules and find out valence electrons for different elements.	Calculates using the data given, such as distance, velocity, speed, frequency, work done, number of moles in a given mass of substance, concentration of solution in terms of mass by mass percentage of substances, conversion of Celsius scale to kelvin scale and vice versa, number of neutrons in an atom from atomic number and mass number, speed of sound, kinetic and potential energies of an object, boiling points of liquids to predict the order of their separation from the mixture, etc.
	Postulate the reason for different atomic numbers for isotopes of an element.	
	Enlist Bohr & Bury's rules for electronic configuration to show the distribution of electrons in elements from atomic number 1 to 20	

4. Structure of the Atom	Write the scientific notations of atoms of commonly known elements and calculate their atomic mass and atomic number.	Uses scientific conventions /symbols / equations to represent various quantities / elements /units , such as SI units, symbols of elements, formulae of simple compounds, chemical equations, etc. Describes scientific discoveries / inventions , such as discovery of various atomic models, discovery of cell with invention of microscope, experiments of Lavoisier and Priestley, beliefs regarding motion, discovery of real cause for peptic ulcers, Archimedes principle, classification of living things, etc.
	Explain Thomson's model of an atom and its incoherent features with the results of other experiments.	
	Draw logical conclusions from Rutherford's experiment to understand the structure of an atom.	
	Compare Rutherford's model with Thomson's atomic model and state their relative advantages and limitations	
	Highlight the limitations of Rutherford's model	
	State the postulates of Neils Bohr's model of an atom and their significance.	
	Get conversant with the Bohr and Bury rules for distribution of electrons into different orbits.	

Chapter no	Learning Objectives	Learning Outcomes
	Compare a Prokaryotic and an Eukaryotic cell	Differentiates materials / objects / organisms / phenomena / processes, based on such as prokaryote and eukaryote, plant cell and animal cell, diffusion and osmosis, simple and complex tissues, distance and displacement, speed and velocity, balanced and unbalanced forces,
	Demonstrate the difference between animal and plant cells with appropriate experiments.	

5. The Fundamental Unit of Life		element, compound and mixture, solution, suspension and colloid, isobars and isotopes, etc.
	Demonstrate the difference between animal and plant cells with appropriate experiments.	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 how does speed of an object change? How objects float / sink when placed on surface of liquid? Is there any change in mass when chemical reaction takes place? What is the effect of heat on state of substances? What is the effect of compression on different states of matter? Where are stomata present in different types of leaves? Where are growing tissues present in plants?
5. The Fundamental Unit of Life	Compare a Prokaryotic and an Eukaryotic cell	Relates processes and phenomena with causes / effects , such as symptoms with diseases / causal agents, tissues with their functions, production with use of fertilizers, process of evaporation with cooling effect, various processes of separation with the physical and chemical properties of the substances, production of sound with vibrations of source, etc.
	Differentiate between types of endoplasmic reticulum and identify their functions.	Explains processes and phenomena , such as function of different organelles, spread of diseases and their prevention, effect of force on the state of motion of objects, action and reaction, revolution of planets and satellites, conservation laws, principle of separation of different gases from air, melting / boiling / freezing, how bats use ultrasound to catch prey, etc.
	Name the cell organelle responsible for storage, modification and packaging of products in a cell	
	Explain the functioning of Mitochondria in a cell.	
	Relate the functions of Lysosomes in a cell	
	Locate the cell organelle that helps cells prepare their food	
	Elaborate the role of chromosomes during cell division.	
	Relate the role of vacuoles in a cell.	

5. The Fundamental Unit of Life	Cognize the variety in shape and size of cells in different organisms and infer that cells are functionally similar despite structural differences.	Draws labelled diagrams / flow charts / concept map / graphs , such as biogeochemical cycles, cell organelles and tissues, human ear, distance-time and speed-time graphs, distribution of electrons in different orbits, process of distillation / sublimation, etc.
	Locate different cell organelles in a plant cell and state their functions.	
	Cognize the variety in shape and size of cells in different organisms and infer that cells are functionally similar despite structural differences.	Describes scientific discoveries / inventions , such as discovery of various atomic models, discovery of cell with invention of microscope, experiments of Lavoisier and Priestley, beliefs regarding motion, discovery of real cause for peptic ulcers, Archimedes principle, classification of living things, etc.
	Compare a Prokaryotic and an Eukaryotic cell	

Chapter no.	Learning Objectives	Learning Outcomes
6. Tissues	Classify the meristematic tissue based on their location in the plant body.	Classifies materials / objects / organisms / phenomena / processes, based on, properties / characteristics , such as classification of plants, animals under various hierarchical sub-groups, natural resources, classification of matter based on their states (solid / liquid / gas) and composition (element / compound / mixture), etc.
	Classify different animal tissues based on their functions in the body	
	Describe the locations and function of meristematic tissue plants.	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 how does speed of an object change? How objects float / sink when placed on surface of liquid? Is there any change in mass when chemical reaction takes place? What is the effect of heat on state of substances? What is the effect of compression on different states of matter? Where are stomata present in different types of leaves? Where are growing tissues present in plants?
	Describe the locations and function of meristematic tissue plants.	Relates processes and phenomena with causes / effects , such as symptoms with diseases / causal agents, tissues with their functions, production with use of fertilizers, process of evaporation with cooling effect, various processes of separation with the physical and

6. Tissues		chemical properties of the substances, production of sound with vibrations of source, etc.
	Identify the type of simple permanent tissues and their functions in a plant.	Explains processes and phenomena , such as function of different organelles, spread of diseases and their prevention, effect of force on the state of motion of objects, action and reaction, revolution of planets and satellites, conservation laws, principle of separation of different gases from air, melting / boiling / freezing, how bats use ultrasound to catch prey, etc.
	Identify the type of complex permanent and their role in a plant.	
	Corelate the structure of epithelial tissues to their functions in an organism.	
	Describe different types of connective tissues and relate their structure to specific functions.	
	Compare the structure of different types of muscular tissues and relate it to their functions.	
	Describe the structure of a neuron and explain the functioning of nervous tissue.	
	Corelate the structure of epithelial tissues to their functions in an organism.	
	Describe different types of connective tissues and relate their structure to specific functions.	Draws labelled diagrams / flow charts / concept map /graphs , such as biogeochemical cycles, cell organelles and tissues, human ear, distance-time and speed-time graphs, distribution of electrons in different orbits, process of distillation / sublimation, etc.
	Compare the structure of different types of muscular tissues and relate it to their functions.	
Describe the structure of a neuron and explain the functioning of nervous tissue.		

Chapter no	Learning Objectives	Learning Outcomes
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7. Diversity in Living Organisms	Identify the characteristic features of different animal groups and distinguish between them. (cyclostomata, pisces, amphibia, reptilia, aves and mammalia)	Differentiates materials / objects / organisms / phenomena / processes, based on such as prokaryote and eukaryote, plant cell and animal cell, diffusion and osmosis, simple and complex tissues, distance and displacement, speed and velocity, balanced and unbalanced forces, element, compound and mixture, solution, suspension and colloid, isobars and isotopes, etc.
	Examine the characteristic criterion between the five kingdoms (monera, protista, fungi, plantae and animalia) and categorise species into a particular kingdom on this basis.	Classifies materials / objects / organisms / phenomena / processes, based on, properties / characteristics, such as classification of plants, animals under various hierarchical sub-groups, natural resources, classification of matter based on their states (solid / liquid / gas) and composition (element / compound / mixture), etc.
	Identify the characteristic differences in order to categorise living organisms into two biggest kingdoms, i.e., plantae and animalia kingdom.	
	Acquire the skill of classifying a plant species into different groups on the basis of their characteristic features.	
	Classify plants into different groups based on characteristic features of body design and presence of vascular tissues.	
	Classify plants into different groups based on their ability to bear seed and the nature of seeds.	
	Acquire the skill of classifying animals into different groups on the basis of their body design.	
7. Diversity in Living Organisms	Identify the characteristic difference between earlier evolved and later evolved living beings.	Explains processes and phenomena, such as function of different organelles, spread of diseases and their prevention, effect of force on the state of motion of objects, action and reaction, revolution of planets and satellites, conservation laws, principle of separation of different gases from air, melting / boiling / freezing, how bats use ultrasound to catch prey, etc.
	Examine the characteristic criterion between the five kingdoms (monera, protista, fungi, plantae and animalia)	

	and categorise species into a particular kingdom on this basis.	Draws labelled diagrams / flow charts / concept map / graphs , such as biogeochemical cycles, cell organelles and tissues, human ear, distance-time and speed-time graphs, distribution of electrons in different orbits, process of distillation / sublimation, etc.
	Identify the characteristic differences in order to categorise living organisms into two biggest kingdoms, i.e., plantae and animalia kingdom.	
	Identify the basis for classification of organisms into kingdoms and name the various levels in a kingdom.	Uses scientific conventions / symbols / equations to represent various quantities / elements / units , such as SI units, symbols of elements, formulae of simple compounds, chemical equations, etc.
	Identify the characteristic difference between earlier evolved and later evolved living beings.	Draws conclusion , such as classification of life forms is related to evolution, deficiency of nutrients affects physiological processes in plants, matter is made up of particles, elements combine chemically in a fixed ratio to form compounds, action and reaction act on two different bodies, etc.
	Identify the characteristic differences in order to categorise living organisms into two biggest kingdoms, i.e., plantae and animalia kingdom.	
	Examine the characteristic criterion between the five kingdoms (monera, protista, fungi, plantae and animalia) and categorise species into a particular kingdom on this basis.	Describes scientific discoveries / inventions , such as discovery of various atomic models, discovery of cell with invention of microscope, experiments of Lavoisier and Priestley, beliefs regarding motion, discovery of real cause for peptic ulcers, Archimedes principle, classification of living things, etc.

Chapter no	Learning Objectives	Learning Outcomes
3. Motion	Differentiate between the distance and displacement and calculate them in real situations.	Differentiates materials / objects / organisms / phenomena / processes, based on such as prokaryote and eukaryote, plant cell and animal cell, diffusion and osmosis, simple and complex tissues, distance and displacement, speed and velocity, balanced and unbalanced forces, element, compound and mixture, solution, suspension and colloid, isobars and isotopes, etc.
	Calculate and compare speed of an object at different intervals of time and differentiate between uniform and non-uniform motion.	

8. Motion	Calculate average speed of an object.	
	Calculate and compare speed of an object at different intervals of time and differentiate between uniform and non-uniform motion.	Calculates using the data given , such as distance, velocity, speed, frequency, work done, number of moles in a given mass of substance, concentration of solution in terms of mass by mass percentage of substances, conversion of Celsius scale to kelvin scale and vice versa, number of neutrons in an atom from atomic number and mass number, speed of sound, kinetic and potential energies of an object, boiling points of liquids to predict the order of their separation from the mixture, etc.
	Calculate average speed of an object.	
	Distinguish between speed and velocity and calculate average velocity.	
	Define accelerated motion and compute the change in velocity of a moving object in a non-uniform motion.	
	Plot distance-time graph for a moving object and determine its speed, velocity, acceleration.	Draws labelled diagrams / flow charts / concept map / graphs , such as biogeochemical cycles, cell organelles and tissues, human ear, distance-time and speed-time graphs, distribution of electrons in different orbits, process of distillation / sublimation, etc.
	Construct velocity-time graphs and interpret them to determine speed, velocity, acceleration.	
	Plot distance-time graph for a moving object and determine its speed, velocity, acceleration.	
	Construct velocity-time graphs and interpret them to determine speed, velocity, acceleration.	Analyses and interprets graphs / figures etc., such as distance-time and velocity-time graphs, computing distance / speed / acceleration of objects in motion, properties of components of a mixture to identify the appropriate method of separation, crop yield after application of fertilizers, etc.
	Extrapolate velocity-time graphs to derive velocity-time, position-time & position-velocity relations.	
	Extrapolate velocity-time graphs to derive velocity-time, position-time & position-velocity relations.	
Calculate speed of an object traveling in a uniform circular motion.	Derives formulae / equations / laws , such as mathematical expression for second law of motion, law of conservation of momentum, expression for force of gravity, equations of motion from velocity-time graphs, etc.	

Chapter no	Learning Objectives	Learning Outcomes
4. Force & Laws of Motion	Interpret data to identify uniform and non-uniform motion of an object.	Differentiates materials / objects / organisms / phenomena / processes, based on such as prokaryote and eukaryote, plant cell and animal cell, diffusion and osmosis, simple and complex tissues, distance and displacement, speed and velocity, balanced and unbalanced forces, element, compound and mixture, solution, suspension and colloid, isobars and isotopes, etc.
	Examine forces acting on a body in order to determine change in body's motion as a consequence of resultant force	
	Determine the impact of frictional force on the motion of an object.	Explains processes and phenomena , such as function of different organelles, spread of diseases and their prevention, effect of force on the state of motion of objects, action and reaction, revolution of planets and satellites, conservation laws, principle of separation of different gases from air, melting / boiling / freezing, how bats use ultrasound to catch prey, etc.
	Identify examples and situations that illustrate the use of Newton's first Law of motion and Inertia.	
	Illustrate Newton's Third Law of Motion.	
	Calculate the momentum of objects when two bodies collide.	Calculates using the data given , such as distance, velocity, speed, frequency, work done, number of moles in a given mass of substance, concentration of solution in terms of mass by mass percentage of substances, conversion of Celsius scale to kelvin scale and vice versa, number of neutrons in an atom from atomic number and mass number, speed of sound, kinetic and potential energies of an object, boiling points of liquids to predict the order of their separation from the mixture, etc.
	Calculate momentum of bodies before and after a collision (when no external force is applied), and thus apply and derive law of conservation of momentum	
	Calculate the momentum of objects when two bodies collide.	Analyses and interprets graphs / figures etc., such as distance-time and velocity-time graphs, computing distance / speed / acceleration of objects in motion, properties of components of a mixture to identify the appropriate method of separation, crop yield after application of fertilizers, etc.

9. Force & Laws of Motion	Interpret SI unit of force and use formulas to calculate mass of an object.	Uses scientific conventions /symbols / equations to represent various quantities / elements /units , such as SI units, symbols of elements, formulae of simple compounds, chemical equations, etc.
	Apply Newton's Second Law of Motion and calculate rate of change of momentum in objects.	Applies scientific concepts in daily life and solving problems , such as separation of mixtures, uses safety belts in automobiles, covers walls of large rooms with sound absorbent materials, follows intercropping and crop rotation, takes preventive measures to control disease causing agents, etc.
	Identify situations that demonstrate the application of Newton's third Law of Motion.	
	Interpret SI unit of force and use formulas to calculate mass of an object.	Derives formulae / equations / laws , such as mathematical expression for second law of motion, law of conservation of momentum, expression for force of gravity, equations of motion from velocity-time graphs, etc.
	Calculate momentum of bodies before and after a collision (when no external force is applied), and thus apply and derive law of conservation of momentum	

Chapter no	Learning Objectives	Learning Outcomes
5. Gravitation	Differentiate between thrust and pressure.	Differentiates materials / objects / organisms / phenomena / processes, based on such as prokaryote and eukaryote, plant cell and animal cell, diffusion and osmosis, simple and complex tissues, distance and displacement, speed and velocity, balanced and unbalanced forces, element, compound and mixture, solution, suspension and colloid, isobars and isotopes, etc.
	Examine the impact of buoyant force to determine if an object will sink or float in water.	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 how does speed of an object change? How objects float / sink when placed on surface of liquid? Is there any change in mass when chemical reaction takes place? What is the effect of heat on state of substances? What is the

10. Gravitation		effect of compression on different states of matter? Where are stomata present in different types of leaves? Where are growing tissues present in plants?
	Explain the role of centripetal force in life situations.	Relates processes and phenomena with causes / effects , such as symptoms with diseases / causal agents, tissues with their functions, production with use of fertilizers, process of evaporation with cooling effect, various processes of separation with the physical and chemical properties of the substances, production of sound with vibrations of source, etc.
	Relate Newton's third law of motion and gravitational force to explain the motion of bodies.	
	Calculate gravitational force and its impact on objects.	Calculates using the data given , such as distance, velocity, speed, frequency, work done, number of moles in a given mass of substance, concentration of solution in terms of mass by mass percentage of substances, conversion of Celsius scale to kelvin scale and vice versa, number of neutrons in an atom from atomic number and mass number, speed of sound, kinetic and potential energies of an object, boiling points of liquids to predict the order of their separation from the mixture, etc.
	Estimate the acceleration due to gravity acting on a body.	
	Calculate buoyant force acting on a body and determine its impact.	
	Relate change in acceleration due to gravity to Earth's shape and weight of objects.	Applies learning to hypothetical situations , such as weight of an object at moon, weight of an object at equator and poles, life on other planets, etc.
	Assess the force of gravitation exerted and compute mass of an object on earth and moon.	
	Calculate the magnitude of acceleration at different points on the path when the object is in motion.	Derives formulae / equations / laws , such as mathematical expression for second law of motion, law of conservation of momentum, expression for force of gravity, equations of motion from velocity-time graphs, etc.
	Interpret the relation between universal constant and acceleration due to gravity.	
Demonstrate a clear understanding of gravitational force.	Describes scientific discoveries / inventions , such as discovery of various atomic models, discovery of cell with invention of microscope, experiments of Lavoisier and Priestley, beliefs regarding motion, discovery of real cause for peptic ulcers, Archimedes principle, classification of living things, etc.	

Chapter no	Learning Objectives	Learning Outcomes
6. Work and Energy	Calculate the total work done on an object when force is applied in varied directions and determine its nature	Calculates using the data given , such as distance, velocity, speed, frequency, work done, number of moles in a given mass of substance, concentration of solution in terms of mass by mass percentage of substances, conversion of Celsius scale to kelvin scale and vice versa, number of neutrons in an atom from atomic number and mass number, speed of sound, kinetic and potential energies of an object, boiling points of liquids to predict the order of their separation from the mixture, etc.
	Generalise the law of conservation of energy to situations of energy transfer and calculate the total energy of an object	
	Calculate power and assess the efficiency of work done	
	Get conversant with commercial unit of energy	
	Calculate total energy consumption and determine total cost in households and industries	
	Comprehend energy and calculate the amount of work an object is capable of doing	Uses scientific conventions /symbols / equations to represent various quantities / elements /units , such as SI units, symbols of elements, formulae of simple compounds, chemical equations, etc.
	Calculate power and assess the efficiency of work done	
	Get conversant with commercial unit of energy	Derives formulae / equations / laws , such as mathematical expression for second law of motion, law of conservation of momentum, expression for force of gravity, equations of motion from velocity-time graphs, etc.
	Relate potential energy to position and calculate potential energy possessed by the objects	
	Comprehend energy transfer and write an expression for the kinetic energy of an object	Draws conclusion , such as classification of life forms is related to evolution, deficiency of nutrients affects physiological processes in plants, matter is made up of particles, elements combine
Judge situations to identify where work is done according to scientific conception and calculate the magnitude of work		

	Comprehend energy and calculate the amount of work an object is capable of doing	chemically in a fixed ratio to form compounds, action and reaction act on two different bodies, etc.
	Relate kinetic energy to motion and calculate kinetic energy possessed by the objects	
	Relate potential energy to position and calculate potential energy possessed by the objects	

Chapter no	Learning Objectives	Learning Outcomes
7. Sound	Generalise that sound travels as successive compressions and rarefactions in the medium.	Differentiates materials / objects / organisms / phenomena / processes, based on such as prokaryote and eukaryote, plant cell and animal cell, diffusion and osmosis, simple and complex tissues, distance and displacement, speed and velocity, balanced and unbalanced forces, element, compound and mixture, solution, suspension and colloid, isobars and isotopes, etc.
	Examine the paths of reflection of sound on different surfaces.	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 how does speed of an object change? How objects float / sink when placed on surface of liquid? Is there any change in mass when chemical reaction takes place? What is the effect of heat on state of substances? What is the effect of compression on different states of matter? Where are stomata present in different types of leaves? Where are growing tissues present in plants?
	Infer and demonstrate that sound is produced due to vibration of different objects.	Relates processes and phenomena with causes / effects, such as symptoms with diseases / causal agents, tissues with their functions,

12. Sound	Relate frequency, amplitude and speed of a sound wave to determine its loudness and frequency.	production with use of fertilizers, process of evaporation with cooling effect, various processes of separation with the physical and chemical properties of the substances, production of sound with vibrations of source, etc.
	Relate properties of the medium through which sound travels to its speed.	
	explain propagation of sound in a medium based on their knowledge of echo and reverberation.	
	Classify audible range of sounds of different organisms into ultra and infra sounds.	Explains processes and phenomena , such as function of different organelles, spread of diseases and their prevention, effect of force on the state of motion of objects, action and reaction, revolution of planets and satellites, conservation laws, principle of separation of different gases from air, melting / boiling / freezing, how bats use ultrasound to catch prey, etc.
	Explain the process of hearing in human beings.	
	Explain the process of hearing in human beings.	Draws labelled diagrams / flow charts / concept map / graphs , such as biogeochemical cycles, cell organelles and tissues, human ear, distance-time and speed-time graphs, distribution of electrons in different orbits, process of distillation / sublimation, etc.
	Interpret the graphical representation of sound waves to determine its frequency, amplitude, and speed.	Analyses and interprets graphs / figures etc., such as distance-time and velocity-time graphs, computing distance / speed / acceleration of objects in motion, properties of components of a mixture to identify the appropriate method of separation, crop yield after application of fertilizers, etc.
	Demonstrate an understanding of application of ultrasound waves in medical, defence and other fields.	Applies scientific concepts in daily life and solving problems , such as separation of mixtures, uses safety belts in automobiles, covers walls of large rooms with sound absorbent materials,

<p>12. Sound</p>	<p>explain propagation of sound in a medium based on their knowledge of echo and reverberation.</p>	<p>follows intercropping and crop rotation, takes preventive measures to control disease causing agents, etc.</p>
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Chapter no	Learning Objectives	Learning Outcomes
<p>8. Why do We Fall Ill?</p>	<p>Understand the requirements for being 'healthy', and thus differentiate between healthy, unhealthy & disease-free human body</p>	<p>Relates processes and phenomena with causes / effects, such as symptoms with diseases / causal agents, tissues with their functions, production with use of fertilizers, process of evaporation with cooling effect, various processes of separation with the physical and chemical properties of the substances, production of sound with vibrations of source, etc.</p>
	<p>Infer 'symptoms' and 'signs' of falling ill, in order to identify a disease</p>	
	<p>Identify acute and chronic diseases, in order to develop a better plan for recovery</p>	
	<p>Identify different causes/ agents for the diseases in order to prevent & cure them</p>	
	<p>Predict how a disease (communicable) spreads in order to prevent it from affecting others</p>	<p>Explains processes and phenomena, such as function of different organelles, spread of diseases and their prevention, effect of force on the state of motion of objects, action and reaction, revolution of planets and satellites, conservation laws, principle of separation of different gases from air, melting / boiling / freezing, how bats use ultrasound to catch prey, etc.</p>
	<p>Identify causes of a disease, and use adequate medicines for cure</p>	
	<p>Tabulate different ways of prevent diseases, in order to stay healthy</p>	
	<p>Identify different causes/ agents for the diseases in order to prevent & cure them</p>	<p>Applies scientific concepts in daily life and solving problems, such as separation of mixtures, uses safety belts in automobiles, covers walls of large rooms with sound absorbent materials, follows intercropping and crop rotation, takes preventive measures to control disease causing agents, etc.</p>

	Identify causes of a disease, and use adequate medicines for cure	Describes scientific discoveries / inventions , such as discovery of various atomic models, discovery of cell with invention of microscope, experiments of Lavoisier and Priestley, beliefs regarding motion, discovery of real cause for peptic ulcers, Archimedes principle, classification of living things, etc.
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Chapter no	Learning Objectives	Learning Outcomes
14. Natural Resources	Understand and Classify the resources present on Earth and ways to save them in order to protect our planet	Classifies materials / objects / organisms / phenomena / processes, based on, properties / characteristics , such as classification of plants, animals under various hierarchical sub-groups, natural resources, classification of matter based on their states (solid / liquid / gas) and composition (element / compound / mixture), etc.
	Describe movement of water particles and heating of land & water in order to explain process of raining	Relates processes and phenomena with causes / effects , such as symptoms with diseases / causal agents, tissues with their functions, production with use of fertilizers, process of evaporation with cooling effect, various processes of separation with the physical and chemical properties of the substances, production of sound with vibrations of source, etc.
	Enlist reasons for air pollution in order to prevent them and keep air clean	
	Explain ways of soil formation in order to understand diversity of life	
	Explore reasons for soil erosion, in order to prevent them and thus improve flora	
	Elaborate the importance of ozone layer and draw conclusions on causes for its depletion, and measures to prevent its depletion	
	Tabulate the composition of air around us & their role, in order to understand role of atmosphere in climate control	Explains processes and phenomena , such as function of different organelles, spread of diseases and their prevention, effect of force on the state of motion of objects, action and reaction, revolution of planets and satellites, conservation laws,
	Comprehend how air moves, in order to explain winds	

14. Natural Resources	List down uses & distribution of water, in order to efficiently use it around the world	principle of separation of different gases from air, melting / boiling / freezing, how bats use ultrasound to catch prey, etc.
	List down reasons for water pollution in order to prevent them and keep air clean	
	Elaborate components of soil and their significance in order to improve biodiversity of an area	
14. Natural Resources	Describe & draw water cycle, and thus explain how water replenishes	Draws labelled diagrams / flow charts / concept map / graphs , such as biogeochemical cycles, cell organelles and tissues, human ear, distance-time and speed-time graphs, distribution of electrons in different orbits, process of distillation / sublimation, etc.
	Describe & draw nitrogen cycle, in order to realize presence of different forms of nitrogen in our surroundings	
	Describe & draw carbon cycle, in order to realize presence of different forms of carbon in our surroundings and reduce greenhouse effect	
	Describe & draw oxygen cycle, in order to realize presence of different forms of oxygen in our surroundings	
	Elaborate the importance of ozone layer and draw conclusions on causes for its depletion, and measures to prevent its depletion	
		Applies learning to hypothetical situations , such as weight of an object at moon, weight of an object at equator and poles, life on other planets, etc.

Chapter no	Learning Objectives	Learning Outcomes
	Recognize growth needs of different crops like temperature, in order to produce them effectively	Relates processes and phenomena with causes / effects , such as symptoms with diseases / causal agents, tissues with their functions, production with use of fertilizers, process of evaporation with cooling effect, various processes of separation with the physical and chemical properties of the substances, production of sound with vibrations of source, etc.
	Analyse ways/ combinations of growing crops in order to maximize yield	
	Develop better storage strategies for crops, in order to minimize storage losses	

<p>15. Improvement in Food Resources</p>	<p>Discover ways of breeding a better variety of seeds, in order to improve quality of crops</p>	<p>Applies scientific concepts in daily life and solving problems, such as separation of mixtures, uses safety belts in automobiles, covers walls of large rooms with sound absorbent materials, follows intercropping and crop rotation, takes preventive measures to control disease causing agents, etc.</p>	
<p>Enlist various ways of enriching the soil in order to increase crop yield</p>	<p>List down ways of irrigating a piece of land, in order to provide adequate water to all crops</p>		
<p>List down some characteristics local and Foreign breeds of cattle, in order to develop cattle with desired qualities</p>	<p>Outline food requirements and common diseases of cattle, in order to protect them better</p>		
<p>Analyse desirable traits in poultry in order to maximize egg production and chicken meat</p>	<p>Identify housing, nutritional & environmental requirements of poultry in order to prevent and control diseases</p>		
<p>Analyse the process of catching fish from seawater and fresh water, in order to maximize yield</p>	<p>Name different varieties of bees and examine their traits, in order to maximize output</p>		
<p>15. Improvement in Food Resources</p>	<p>List down some characteristics local and Foreign breeds of cattle, in order to develop cattle with desired qualities</p>		<p>Draws conclusion, such as classification of life forms is related to evolution, deficiency of nutrients affects physiological processes in plants, matter is made up of particles, elements combine chemically in a fixed ratio to form compounds, action and reaction act on two different bodies, etc.</p>
<p>Outline food requirements and common diseases of cattle, in order to protect them better</p>	<p>Analyse desirable traits in poultry in order to maximize egg production and chicken meat</p>		
<p>Identify housing, nutritional & environmental requirements of poultry in order to prevent and control diseases</p>			

	Analyse the process of catching fish from seawater and fresh water, in order to maximize yield	
	Name different varieties of bees and examine their traits, in order to maximize output	
	Describe ways/ organisms by which crops get affected, in order to develop a solution to prevent them from attacking crops	<p>Applies the interdependency and interrelationship in the biotic and abiotic factors of environment to promote conservation of environment, such as organic farming, waste management, etc.</p>