Theme 1: Matter

Objects that take shape and have mass are called matter. A block of wood, milk and air are all made of matter. Matter is made up of tiny particles called atoms and molecules that cannot be seen by the human eye as they are very small. Matters exists in form of solid, liquid or gas. A solid has a certain size and shape, like a block of wood. A liquid, like water, has a size but does not have a definite shape. It takes the shape of the container it is put in. A gas, like air, is a form of matter that has no definite shape or size.

Learning Outcomes:

Children will be able to:

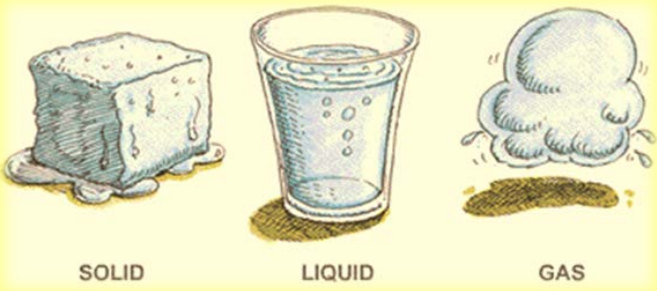
- define matter;
- describe what matter is made of;
- list the distinguishing properties of solid, liquid and gas;
- classify different objects in terms of solid, liquid and gas.

Matter

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
Matter- its meaning and composition. **States of Matter** Solids, Liquids and Gases. Characteristics of Solids, Liquids and Gases (Shape, texture and Volume). Distinguishing properties of Solids, Liquids and Gases.	Revising previously learnt concepts. Building on children's previous learning. Demonstrating different types of matter. Children will be provided learning opportunities to: recognize different states of matter, using qualitative observation distinguish between objects in terms of solid, liquid and gas, using qualitative observation.	Objects in the immediate environment. Objects in the form of solid, liquid and gas. Video on matter and its forms. Charts and pictures.

Life Skills: Decision making, cooperation and working together

Integration: Chemistry, Technology in daily life



Theme 2: Physical Quantities and Measurement

Whenever we make a measurement, we require a number which answers the 'how' part of it and a unit which tells us that we are talking about. The unit that is used for a physical quantity is universally accepted and used so that science is communicated and understood all over the world, without any ambiguities. Length, mass, time and temperature are some of the physical quantities that are discussed in detail. They have their own units and symbols for representation. Different devices are required to make measurements of these quantities. How to use a device properly for measurement is an important aspect of learning physics. Area is an example of a physical quantity that can be expressed in terms of a product of two measurements in length. Children learn to develop skills of converting the magnitude of a physical quantity from one unit to its other related unit.

Learning outcomes:

Children will be able to:

- define length, mass and time;
- express length, mass, time, temperature and area in proper units with proper symbols;
- measure length of objects using a ruler and a measuring tape;
- measure mass of an object using a beam balance and an electronic balance;
- measure time using a clock, a watch and a stop-watch;
- relate temperature of an object with its hotness or coldness;
- measure temperature of a person using a clinical thermometer;
- measure temperature of an object using a laboratory thermometer;
- measure area of a regular object using a graph paper;
- convert a physical quantity from one unit into other related units.

Physical Quantities and Measurement

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Measurement of Length: ☛ Concept of length as distance between two points. ☛ Measurement of length (ruler, measuring tape). ☛ Units (with symbol and full name). Name of unit / Symbol centimetre / cm meter / m Kilometre / km inch / inch foot / ft ▸ Measurement of Mass: ☛ Concept of Mass as matter contained in an object. ☛ Measurement of Mass (Beam Balance, Electronic Balance). ☛ Units (with symbol and full name).	▸ Explaining the concept of length as a distance between two points using objects in classroom like books, table, blackboard or length of classroom, etc. ▸ Demonstrating with the help of a ruler and a measuring tape and explaining the marking on each. ▸ Explaining the correct method of measurement using a ruler and a measuring tape ▸ Measuring the length of an object using a ruler / measuring tape. ▸ Explaining different units of length like cm, m, km, inch, ft and the relation between them. ▸ Practice converting one unit into others. ▸ Explaining the concept of mass as matter contained in an object using objects around us. ▸ Demonstrating a Beam balance and Electronic balance and explaining the marking on each.	▸ Objects around us. ▸ Ruler and measuring tape. ▸ Video on measurement of length using a ruler and a measuring tape. ▸ Objects in classroom. ▸ Beam balance and Electronic balance. ▸ Video on measurement of mass using beam balance and electronic balance. ▸ Clock, watch, stop watch. ▸ Video on measurement of time using a clock, watch and stopwatch.

Physical Quantities and Measurement

Key Concepts	Suggested Transactional Processes	Suggested Learning resources

Name of unit	Symbol
milligram	mg
gram	g
kilogram	kg

- Measurement of Time:
  - Concept of time and explanation in terms of hours, minutes and seconds.
  - Measurement of Time (Clock, watch, stop watch).
  - Units (with symbol and full name).

Name of unit	Symbol
Second	s
Minutes	min
Hour	h

(No distinction of SI, metric, MKS, CGS).

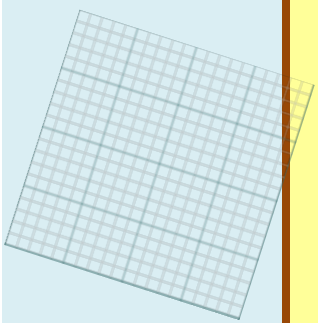
- Measurement of Temperature:
  - Temperature as a measure of degree of hotness or coldness of body.
  - Measurement of temperature (clinical thermometer, laboratory thermometer).
  - Normal temperature of a human body.
  - Units (with symbol and full name).

Name of unit	Symbol
Celsius	°C

- Measurement of Area:
  - Concept of area.
  - Area of Regular shapes (using graph paper).

- Explaining the correct method of measurement using a beam balance and an electronic balance.
- Measuring mass using a beam balance.
- Measuring mass using an electronic balance.
- Explaining different units of mass like mg, g, kg and the relation between them.
- Exercise for developing the skill of conversion of one unit into others.
- Explaining time in terms of hours, minutes and seconds.
- Demonstrating a clock, watch and stopwatch.
- Explaining the correct use of a clock, watch and stopwatch
- Measurement of time using a clock, watch and a stop watch by children in groups and individually.
- Explaining different units of time like seconds, minutes and hours and the relation between them.
- Exercise for developing the skill of conversion of one unit into others.
- Explanation of temperature as a measure of hotness of an object.
- Demonstrating the working of a clinical and a laboratory thermometer and explaining the correct use of a thermometer.
- Measurement of body temperature using a clinical thermometer on one another by children in pairs.
- Measurement of temperature of hot water using a laboratory thermometer and children recording the same.
- Explanation of unit and symbol of temperature.
- Explanation about scales on a graph paper.
- Measurement of area of objects of regular shapes using a graph paper.

- Use of mobile to measure time interval.
- Hot and cold objects.
- Clinical and Laboratory thermometers.
- Video showing measurement of temperature using a thermometer.
- A set of objects of regular shapes.
- Graph papers.
- Pencils.



Life Skills: Health, Communication skills, problem solving, Cooperation and working together.

Integration: Mathematics, Chemistry, Biology, Technology in daily life.

Theme 3: Force

This theme will enable children to understand the terms 'Force' and 'Friction'. The push or pull of an object is called Force. A force can cause a stationary object to move and can change the direction of a moving object. When an inflated football is pressed from all sides its shape changes. When a ball is rolled on a floor, it stops after some time. Children will understand why this happens because the force acting between the surface of the ball and the floor slows down the ball. This force is called Friction. Friction can be static, sliding or rolling. There are situations where friction is advantageous and situations where it is disadvantageous.

Learning outcomes:

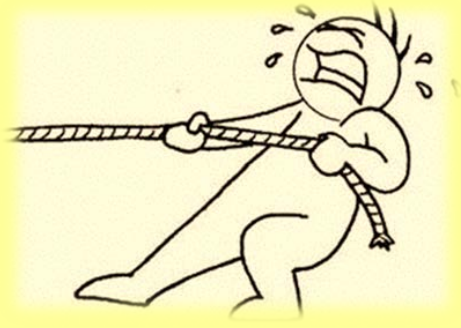
Children will be able to:

- define force;
- explain that a force can change the state of motion;
- explain that a force can change the shape of an object;
- describe force of friction with examples from daily life;
- describe situations where static/ sliding / rolling frictions are in play;
- explain advantage and disadvantage of force of friction in daily life situations.

Force

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Force as a push or pull. ▸ Effects of force on ☛ Mass (No effect) ☛ Speed ☛ Direction (rest and motion) ☛ Change in shape and size ☛ Using real world examples only. ▸ Force of Friction: ☛ Types – Rolling, Sliding and Static. ☛ Advantages and Disadvantages.	▸ Demonstrating to and discussing with children: ☛ force as push or pull. ☛ that a force can change a state of motion. ☛ that a force can change shape of an object. ☛ the play of force of friction in an object in motion.	▸ A couple of tennis balls. ▸ An inflated football, ▸ A toy cart. ▸ Surface of a table. ▸ Video showing force, different types of frictional forces and effect of force.

Integration: Geography, Technology in daily life.
Life Skills: Communication, problem-solving.



Theme 4: Energy

The ability to do work is called Energy. Machines help us to do work. For example, a bottle opener is a machine. A needle, a doorknob are also machines. Some machines are more complex than others. A simple machine changes the direction or the magnitude of force applied. The six simple machines are the lever, the pulley, the wheel-and-axle, the inclined plane, the wedge and the screw. The factor by which a machine multiplies the force applied is called 'mechanical advantage'. On the basis of location of fulcrum (the pivot point), the load and the effort, levers may be classified into three types or orders. The aim of this theme is to enable children know and understand about different types of machines and levers.

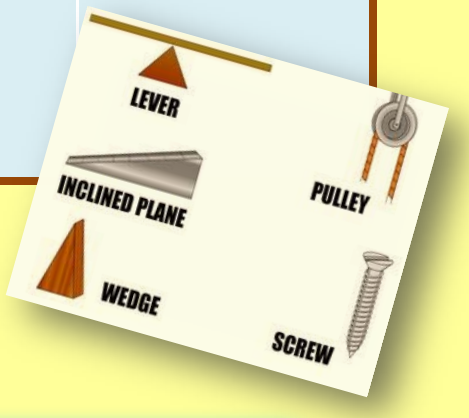
Learning outcomes:

Children will be able to:

- define what a machine is;
- describe six simple machines with examples from daily life;
- describe different types of levers;
- define mechanical advantage of a lever;
- solve problems based on formula for mechanical advantage of a lever.

Energy

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Simple Machines: ☛ Basic Concept ☛ Mechanical Advantage ▸ Types of Simple Machines: ☛ Lever ☛ Wheel and axle ☛ Pulley ☛ Inclined plane ☛ Wedge ☛ Screw ▸ Different Orders of Levers ▸ Numericals based on mechanical advantage or leverage Load × Load arm = Effort × Effort arm.	▸ Demonstrating and explaining the use of simple machines. ▸ Identifying simple machines in devices used in daily life. ▸ Explaining the level and location of fulcrum, load and effort with help of diagram. ▸ Explaining the three types of levers. ▸ Explaining the term, 'mechanical advantage' of a machine. ▸ Helping children solve simple numerical problems based on MA.	▸ Charts of simple machine. ▸ Six simple machines. ▸ Models of three types of levers. ▸ Interactive videos on simple machines.



Integration: Mathematics, Technology in daily life.
Life Skills: Cooperation and working together, Problem-solving.

Theme 5: Light

Light is an important element that helps in making objects visible. It travels in a straight line. When light falls on an object it casts a shadow. The earth and the moon and, in fact, planets cast their shadows in space. Sometimes, on a full-moon day, the moon passes through the shadow of the earth. The Earth casts two shadows that fall on the moon during a lunar eclipse. The umbra is a full dark shadow. The penumbra is a partial outer shadow.

Learning outcomes:

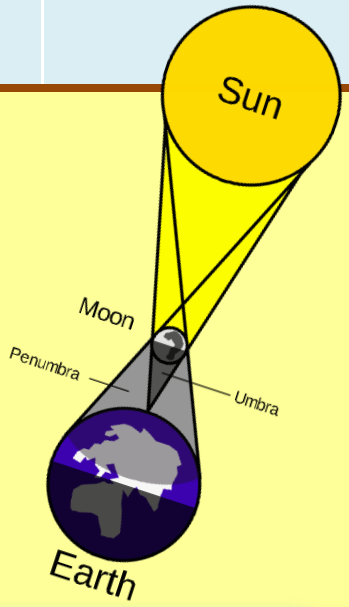
Children will be able to:

- give examples of evidence that light travels in straight lines;
- describe principle, construction and working of a pinhole camera;
- explain the factors on which the size of the image in a pinhole camera depends;
- explain the formation of shadows;
- explain the occurrence of lunar eclipse;
- explain the term umbra and penumbra.

Light

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Rectilinear Propagation of Light. ▸ Applications of rectilinear propagation of light. ▸ Pinhole camera: ☛ Principle and Working ☛ Factors on which the size of the image produced depends ▸ Shadows: ☛ Umbra ☛ Penumbra ☛ Natural Shadows – Eclipses	▸ Demonstration of activities to show that light travels in straight line. ▸ Demonstration of construction of a pinhole camera. ▸ Explanation of working of a pinhole camera. ▸ Engaging children in construction of a pinhole camera. ▸ Engaging children in use of a pinhole camera. ▸ Demonstration of shadow and eclipse formation.	▸ Candle, a rubber tube, three identical cardboards, moulding clay (Rectilinear propagation of Light). ▸ Pinhole camera: Two boxes so that one can slide into another with no gap in between, Tracing paper (for screen). ▸ Video on Pinhole camera. ▸ Video on lunar eclipse.

Integration: Geography, Art
Life Skills: Cooperation and working together, problem solving.



Theme 6: Magnetism

Substances that have property of attracting iron are called magnets. The materials that get attracted towards a magnet are known as magnetic materials. For example, iron, nickel and cobalt. Materials that are not attracted towards a magnet are non-magnetic- for example, glass, plastic, wood. When a magnet is suspended freely, it always rests in the same direction. The end of the magnet that points toward North is called North pole. The end that points towards south is called South pole. This property of magnets helps us to find directions. Opposite poles of two magnets attract each other and similar poles repel one another. Each magnet is surrounded by a magnetic field. Permanent magnets retain their magnetism for a long time. Temporary magnets behave like a magnet only till they are under influence of a magnetic field. When an electric current flows through a coil of wire, the coil behaves like a magnet. This type of magnet is called electromagnet. Electromagnets are useful because their strength can be varied and they can be turned off and on, as desired.

Learning outcomes:

Children will be able to:

- state characteristics of a magnet;
- distinguish between magnetic and non-magnetic substances;
- state the properties of magnets;
- recognise the magnetic field around a magnet;
- recognize the Earth's magnetic field;
- describe different ways to make a magnet;
- distinguish between permanent and temporary magnets;
- make a simple electromagnet;
- list precautions for care and storage of magnets;
- discuss loss of magnetic property due to heating, hammering and electricity.

Magnetism		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning resources**
▸ Magnetic and non-magnetic substances. ▸ Characteristics of a magnet. ▸ properties of magnets ▸ Magnetic field around a magnet. ▸ Earth's magnetic field. ▸ Making of Magnets ▸ Permanent & temporary magnets and their uses ▸ Electromagnets and ▸ choice of material for the core of an electromagnet ▸ Care & storage of magnets ▸ Demagnetization by heating, hammering and electricity.	▸ Demonstrating magnetic and non-magnetic substances. ▸ Demonstrating properties of a magnet through activities. ▸ Engaging children in recognizing magnetic fields around a magnet. ▸ Demonstrating different ways of making a magnet. ▸ Explaining difference between permanent and temporary magnets and their uses. ▸ Demonstration of an electromagnet. ▸ Explaining demagnetization by heating, hammering and electricity.	▸ Bar magnets. ▸ Iron nails and filings. ▸ Stand and thread to suspend a magnet. ▸ Compass. ▸ A coil of wire. ▸ A battery. ▸ A key. ▸ A long nail. ▸ Videos about magnets and electromagnets. ▸ Video about Earth as a magnet

Integration: Geography, Technology in daily life.
Life Skills: Cooperation and working together, critical thinking.

Theme 1: Physical Quantities and Measurement

In the earlier classes, teaching-learning emphasised on the measurement of length, mass, time and temperature using devices made for such measurements and how a particular unit and symbol are used to express the result of measurement of each physical quantity. In continuity, this theme aims at enabling children to develop the ability to measure volume and determine the density of a regular solid. They will be introduced to the concept of speed, that contains simple problems to provide an idea of the speed of objects around us and also to know how fast or slow an object is moving.

Learning outcomes:

Children will be able to:

- define volume;
- express volume of an object in a proper unit with proper symbols;
- measure volume of a liquid using a graduated cylinder and a graduated beaker;
- estimate the area of an object of irregular shape using a graph paper;
- measure the volume of an irregular solid using a graduated cylinder /a graduated beaker;
- define density and write its formula;
- express density in a proper unit and symbol;
- measure density of a regular/irregular solids;
- express result of measurement in a proper unit with proper symbol;
- define speed and write its formula;
- express speed in proper units with proper symbol;
- solve simple numerical problems based on formulas of density and speed.

Physical Quantities and Measurement

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Measurement of Volume (3D concept): ☛ Concept of unit volume ▸ Measurement of Area: ☛ Estimate the Area of irregular shape using a Graph paper ▸ Measurement of Density of regular solids: ☛ Basic concept ☛ Formula ☛ Simple Numericals (SI units not required) ▸ Calculation of Speed: ☛ Basic Concept ☛ Formula ☛ Simple Numericals (SI units not required).	▸ Demonstration of graduated cylinder and graduated beaker ▸ Explanation of process of measurement of volume ▸ Explaining use of graph paper to measure area of irregular shape ▸ Explanation of process of measurement of density of a regular solid ▸ Explanation of concept of speed with examples from daily life ▸ Explaining calculation of speed ▸ Engaging children in activities involving measurement of volume, area, and density. ▸ Engaging children in simple problem solving involving the concepts of density and speed.	▸ Graduated cylinder ▸ graduated beaker in activities ▸ a small piece of stone ▸ a regular object ▸ objects of irregular shape ▸ use of graph papers ▸ video on volume measuring devices ▸ video on motion and speed

Integration: Chemistry, Technology in daily life
Life Skills: Creative thinking, Problem-solving

Theme 2: Force and Pressure: Motion

An object is said to be in motion if its position changes with time. When walking, running or cycling or when a bird is flying, there is motion involved. Various objects have different types of motion. They can be classified into translatory motion, circular motion and oscillatory motion. Motion of an object can also be classified as periodic and non-periodic. If an object travels equal distance in equal time, its motion is said to be uniform, if not, the motion is said to be non-uniform. A physical quantity used to distinguish between uniform and non-uniform motion is average speed.

Learning outcomes:

Children will be able to:

- define motion;
- identify objects in motion and at rest;
- describe different types of motion, with examples from daily life;
- define uniform and non-uniform motion with examples from daily life;
- define the concept of speed (average speed);
- calculate average speed of objects based on data provided;
- define weight;
- relate weight of an object with its mass.

Force and Pressure: Motion

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Motion as a change in position of an object with respect to time. ▸ Types of motion: ☛ Translatory ☛ Circulatory ☛ Oscillatory ☛ Repetitive (Periodic and Non Periodic) ☛ Random ▸ Uniform and Non Uniform Motion: concept of distance and speed (average speed) ▸ Weight: ☛ Concept ☛ Differences between Mass and Weight.	▸ Demonstrating objects at rest and in motion. ▸ Demonstrating different types of motion. ▸ Asking children to work in groups and list objects in different types of motion in a table. ▸ Demonstrating motion of a pendulum as case of a periodic motion. ▸ Demonstrating uniform and non-uniform motion using examples from daily life ▸ Explaining the concept of speed; unit of speed. Simple numericals for calculating average speed of objects in daily life. ▸ Explaining the concept of weight. ▸ Explaining the difference between mass and weight.	▸ A ball. ▸ A stop watch. ▸ A bob with hook. ▸ Thread. ▸ Laboratory stand. ▸ Video on motion and types of motion. ▸ Video on uniform and non-uniform motion. ▸ Video on speed of objects in daily life. ▸ Videos on ocean currents, cyclones/ anti cyclones, atmospheric pressure

Integration: Mathematics, Chemistry, Geography, Technology in daily life.
Life Skills: Problem-solving, Cooperation and working together.

Theme 3: Energy

This theme aims at enabling children to know about energy and the different its forms namely, kinetic energy, potential energy, heat energy and electrical energy. They will also understand that one form of energy can be converted into another form and that this is known as transformation of energy. Energy is conserved during transformation. This is known as the law of Conservation of Energy.

Learning outcomes:

Children will be able to:

- define energy;
- express energy in proper units;
- discuss about different forms of energy;
- describe conversion of energy from one form to another in different situations;
- state law of conservation of energy, with examples.

Energy

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Energy: ☛ Energy as capacity to do work. ☛ Units of energy (joule and calorie). ☛ Different forms of energy. ☛ Inter-conversion of energy ▸ Law of Conservation of Energy: ☛ Real world examples.	▸ Explanation of the term Energy and encouraging children to share their experiences with examples from daily life. ▸ Explanation of relation between Work and Energy. ▸ Discussion with children about the different forms of Energy, with examples. ▸ Demonstration of inter-conversion of Energy, examples from daily life ▸ Demonstration of the conservation of Energy ▸ Providing examples of different applications of conservation of energy (Roller coaster, production of hydroelectricity etc.) and encouraging children to carefully make energy conversion diagrams and deduce that energy is conserved.	▸ A simple pendulum. ▸ Charts showing different forms of energy. ▸ Video/s showing interconversion of different forms of energy.

Integration: Chemistry, Biology, Technology in daily life.
Life Skills: Cooperation and working together, problem-solving.

Theme 4: Light Energy

Light travels in a straight line. Light from an object can move through space and reach the human eye which enables one to see this page, or a face in a mirror. This process is known as reflection. It obeys a law known as law of reflection. Light travels in air at a constant speed of 3 x 10^8 m/s or 3 lakh kilometre per second. In other mediums, like glass or water, it slows down. Light from sun is composed of seven colours. The colours of objects fascinates everybody, Physicists have found that all colours can be explained as addition of three primary colours. The primary colours are red, green and blue. Colours that is seen on a TV or computer screen arise due to combination of these primary colours. Appearance of colour of an object is due to process of absorption and reflection of different colours by the object.

Learning outcomes:

Children will be able to:

- explain the phenomenon of reflection;
- define the terms, plane, normal to the plane, point of incidence, angle of incidence and angle of reflection;
- state the law of reflection;
- describe reflection of light from a plane mirror;
- use law of reflection to show formation of image by a plane mirror;
- describe the characteristics of image formed by a plane mirror;
- state the value of speed of light;
- state primary colours;
- describe formation of secondary colours by addition of primary colours;
- explain the observed colour of an object based on reflection and absorption of light of different colours from the object.

Light Energy

Key Concepts	Suggested Transactional Processes	Suggested Learning resources

▸ Reflection:
  ☛ Definition and Examples.
  ☛ Terms related to reflection - normal, plane, point of incidence, angle of incidence, angle of reflection.
▸ Laws of Reflection.
▸ Plane mirror:
  ☛ Uses.
  ☛ Ray Diagram (no mention of virtual image). Characteristics of the image formed (Lateral Inversion, same size, distance is preserved).
▸ Speed of light (3 x 10^8 m/s).
▸ Primary colours (RGB).
▸ Formation of secondary colours by colour addition.
▸ Appearance of colour of an object (based on reflection and absorption)
▸ Colour subtraction.
	▸ Demonstrating on plane mirror and reflection of light. Explaining the point of incidence, normal, angle of incidence and angle of reflection.
	▸ Engaging children in activities to show reflection of light.
	▸ Helping children to draw a diagram to show a reflection by mirror.
	▸ Demonstrating primary colours and formation of secondary colours using primary colours and asking children to do the same in pairs/groups.
	▸ Explaining the colour of an object based on absorption and reflection.
	▸ Showing children a video on primary colours and mixing of primary colours and then discussing the same with them.
	▸ Explaining to children how rainbow is formed.
		▸ A plane mirror.
		▸ Reflecting surfaces.
		▸ A laser pencil pointer.
		▸ Pencil, scale, eraser, marker.
		▸ White paper sheet.
		▸ A set of primary colours.
		▸ A set of colour filters.
		▸ A source of white light.
		▸ Interactive video on primary colours and mixing of primary colours.
		▸ Picture/ video on rainbow.

Integration: Art, Mathematics, Technology in daily life.
Life Skills: Cooperation and working together, problem-solving.

Theme 5: Heat

Heat is a form of energy. Sunlight carries heat that gives warmth when exposed to it. When water is heated, its energy in the form of heat increases and becomes hot. When heat energy of an object increases, it can result in (i) change of temperature, (ii) change in size and/or (iii) change in state of an object. Some materials like aluminium are good conductors of heat and some, like wood are bad conductors of heat. Heat from a hot object is transferred to a cold object in three different ways- conduction, convection and radiation. Previous learning included topics on temperature and its measurement in degree Celsius. Further, two other frequently used temperature scales, Fahrenheit scale and Kelvin scale have been introduced in this theme for a better understanding of concepts related to temperature.

Learning outcomes:

Children will be able to:

- define heat as energy;
- define units of heat;
- describe temperature scales: degree Celsius, Fahrenheit and Kelvin;
- describe different effects of heat;
- explain different modes of heat transfer;
- decide about conductor and insulator of heat in different applications;
- describe construction and working of thermos flask.

Heat

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Heat as a form of energy and its units, joule(J) and calorie (cal). ▸ Different units of Temperature (°C, °F, K). ▸ Effects of Heat: ☛ Change in Temperature. ☛ Change in Size (Expansion and contraction). ☛ Change in State. ☛ Good Conductors and Bad Conductors of Heat and their examples. ☛ Choice of conductors and insulators in day to day life (Pan handles, metal cooking utensils etc.) ▸ Methods of Heat Transfer: ☛ Conduction ☛ Convection ☛ Radiation ▸ Thermos Flask: (Application of Heat Transfer) ☛ Construction ☛ Working	▸ Demonstration and explanation of use of Thermometers marked in F. ▸ Engaging children in activity to measure temperature of water in F. ▸ Demonstration of heat transfer through different modes, conduction, convection and radiation. ▸ Children have to deduce where conduction, convection and radiation is taking place in some real world applications. ▸ Children use thermocol and other materials to make a cooling pack (emphasizing on the process of heat transfer). ▸ Explanation of the construction and working of a thermos flask.	▸ Thermometer graduated in °C and °F. ▸ Water in beaker. ▸ A tripod with mesh screen. ▸ A burner for heating. ▸ A set up to show heat transfer by conduction. ▸ A round flask. ▸ Potassium Permanganate Crystals. ▸ Test tube. ▸ Test tube holder. ▸ Thermos flask. 

Integration: Geography, Biology, Technology in daily life.
Life Skills: Cooperation and working together, problem-solving.

Theme 6: Sound

Sound is produced by the vibration of objects and different types of instruments are used to produce sound. In humans, sound is produced by the voice box or larynx. Sound needs a medium to propagate hence in vacuum it is not possible to hear one another. Sound wave is a longitudinal wave. A wave is characterised by an amplitude and a frequency. Like light, sound is also reflected from a surface. Sound is also absorbed by a medium. Therefore, walls of a theatre are lined with layers of materials that absorb sound. Sound travels with different speeds in different mediums and travels fastest in solids. This theme will enable children to know and understand 'Sound', different sources of sound and how it travels.

Learning outcomes:

Children will be able to:

- identify different sources of sound;
- describe sound as a longitudinal wave;
- define amplitude and frequency of sound;
- demonstrate that sound requires a medium to transmit;
- list examples of reflection and absorption of sound;
- analyse the relative speed of Sound in different mediums;
- design a sound-proof box.

Sound

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Sources of sound. ▸ Sound as a longitudinal wave. ▸ Characteristics of a sound wave: Amplitude (Relate amplitude with loudness) and Frequency. ▸ Sound needs a medium to propagate. ▸ Reflection and Absorption of sound. ▸ Relative speed of sound in different mediums.	▸ Demonstration of production of sound using simple objects within the classroom followed by discussion ▸ Children place their hand on their throats and when they speak they feel vibration. ▸ Explanation of the characteristics of sound. ▸ Demonstration that sound needs a medium to propagate. ▸ Engaging children in design of an activity to show that sound need a medium to propagate, using two mobiles and a tumbler. ▸ Demonstration of reflection of sound ▸ Demonstration of absorption of sound ▸ Explanation of relative speed of sound in solid, liquid and gas. ▸ Design of sound proof box.	▸ Different sources of sound. ▸ A setup to show that sound need a medium to propagate. ▸ Materials for reflecting sound. ▸ Materials for absorbing sound. ▸ Videos on sound, sources, need of a medium, characteristic, reflection, absorption.

Life Skills: Cooperation and working together, Problem solving, Critical thinking.
Integration: Music, Mathematics, Technology in daily life.

Theme 7: Electricity and Magnetism

The basic law of electromagnetism states that "Like poles of magnets repel one another and unlike poles attract". When an electric current is passed through a coil, the coil behaves like a magnet. This magnet is called an electromagnet. The strength of this magnet is increased by inserting a core of suitable material. Many objects around us, like electric bell, electric motor, loudspeaker, etc. have electromagnets in them. A cell is a source of electricity and are used in torches, watches, calculators, etc. When connected to a device like bulb, it sends current through the bulb and the bulb lights up. Flow of charges constitute current. Materials that allow current to flow through them are called conductors whereas materials that do not allow passage of current through them are called insulators. Children will learn how electric components are arranged in simple series and simple parallel arrangements.

Learning outcomes:

Children will be able to:

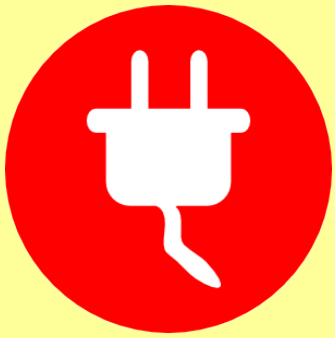
- state the Law of Magnetism;
- describe test for a magnet;
- explain the phenomenon of electromagnetism;
- describe an electromagnet and its uses;
- explain construction and working of an electric bell;
- relate current to flow of charge;
- recognize electric cell as a source of electricity;
- define resistors as the component that opposes the flow of current;
- represent different components like cell, battery, key, bulb, connecting wire, resistor by standard symbols;
- make simple series circuits and simple parallel circuits;
- recognize battery as series combination of cells;
- define conductors and insulators of electricity.

Electricity and Magnetism

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
Law of Magnetism Test for a magnet (by repulsion) Electromagnetism, Electromagnets and their applications- Electric bell Electric current as a flow of charges Electric cell as source of electricity Resistors as components that oppose the flow of current. Symbolic representation of electrical components (key,	Revisiting previous concepts. Building on children's previous learning. Demonstrating and explaining the law of electromagnetism. Demonstrating simple electromagnets. Engaging children to demonstrate electromagnets. Description of use of electromagnets. Demonstrating the construction and working of electric bells. Demonstrating electric cell and explanation of its working. Familiarizing children with symbols for electric components.	Two bar magnets Laboratory stand Thread and hook for magnet An iron nail A cell A coil of wires A compass Core for electromagnet Dry cell Key Connecting wires Three bulb Banana clips

Electricity and Magnetism		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning resources**
battery, bulb, conducting wire, resistor) • Simple electric circuit- Series and Parallel • Battery as a collection of cells connected in series. • Good and Bad conductors of electricity	• Explaining the role of key in electric circuits. • Explaining the precautions to be taken before an electric circuit is switched-on. • Engaging children in making simple electric circuits. • Engaging children in practical tasks involving Series and Parallel combinations. • Engaging children in design of activity to test whether a given object is good or bad conductor of electricity. • Showing video on earth's magnetic declination from the true north.	• Video showing electromagnets and electric bells • Video showing series and parallel circuits • Video on earth's magnetic declination

Integration: Chemistry, Geography, Technology in daily life.
Life Skills: Problem-solving, Critical thinking, Cooperation and working together.



Theme 1: Matter

Building on previous learning in Classes VI and VII, in this class the theme aims at introducing children to the Kinetic Theory which will help them in understanding the difference in the three states of Matter. The theory states that all matter is made of tiny particles which in an object are always in motion that may move slow or fast. In solids, the particles have less energy hence do not move around freely. In liquids, they have relatively more energy and move about freely within the container. The particles of gases have much more energy and move freely at high speeds. The increase or decrease in the movement of energy is the result of heating or cooling of an object. Heating an object increases the energy of particles whereas cooling decreases the energy of particles of an object.

Learning outcomes:

Children will be able to:

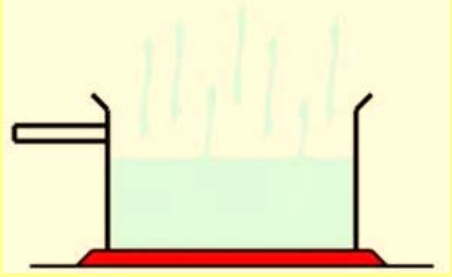
- distinguish the three states of matter in terms of movement of particles;
- relate the three states of matter with energy of movement of particles in them;
- describe the change of state using Kinetic theory:
  - Boiling
  - Vaporization
  - Melting
  - Fusion
  - Evaporation
  - Condensation
  - Sublimation
  - Deposition
  - Freezing
- identify appropriate observable parameters in experiments;
- collect data and make careful observation;
- present the results in the form of tables;
- consider results using scientific knowledge and communicate these.

Matter

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
Kinetic Theory of Matter. ▸ Three states of matter in terms of movement of particles. ▸ Energy content in the three states of matter. ▸ Change of state in matter using the Kinetic theory: • Boiling • Vaporization • Melting • Fusion • Evaporation	▸ Revising previous concepts learnt by children. ▸ Building on children's previous learning. ▸ Demonstrating matter in three states. ▸ Demonstrating change of state, solid to liquid, liquid to gas, etc. ▸ Demonstrating the phenomenon of melting and boiling. ▸ Engaging children in undertaking activities related to melting and boiling, condensation and freezing and	▸ Samples of three states of matter ▸ A beaker ▸ Tripod stand with mesh ▸ Burner ▸ Thermometer ▸ Laboratory stand ▸ Naphthalene balls ▸ Videos on states of matter and change of state

Matter		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning resources**
☛ Condensation ☛ Sublimation ☛ Deposition ☛ Freezing Change of state diagrams (using the terms mentioned above).	making observations followed by discussion. Engaging children (individually /in groups) to observe change of state; solid to liquid, liquid to gas and record what is observed. Explaining different terms, such as, boiling, melting, freezing, condensation, sublimation, etc. with examples from daily life. Observation of above mentioned phenomena in possible classroom situations (using different samples) Children observing solids and liquid (Compare and contrast the physical characteristics). Encouraging children to prepare a comparison table of different states based on (shape, texture and volume). Asking children to describe the interconversion of states using examples like water, naphthalene balls etc. and additional examples of all types of change of state. Engaging children in pairs or in small groups in investigation of the related change of state due to addition of energy (heating) or cooling due to a substance. Engaging children (individually/ in groups/in pairs) in the design of activities to show that melting or boiling occurs at a fixed temperature for a substance.	

Integration: Chemistry, Geography, Technology in daily life.
Life Skills: Cooperation and working together, Problem-solving.



Theme 2: Physical Quantities and Measurement

Previous learning demonstrated the measurement of the density of regular solids. In this class children will develop the ability to measure the, density of an irregular solid and also of a given liquid. They will also understand that due to the difference in the value of densities of a solid and liquid, a piece of solid can float or sink in a liquid.

Learning outcomes:

Children will be able to:

- measure density of an irregular solids;
- measure density of a liquid;
- discuss the concept of floatation based on relative densities of solid and liquid;
- express result of measurement in proper unit with proper symbol;
- solve simple numerical problems based on formula of density;
- compare densities of matter in three states, solid, liquid and gas;
- make careful observations including measurements;
- gather data using formal units;
- make conclusions from collected data;
- make predictions using scientific knowledge and effectively communicating the same.

Physical Quantities and Measurement

Key Concepts	Suggested Transactional Processes	Suggested Learning resources

▸ Measurement of Density of irregular solids using:
  ☛ Eureka Can
  ☛ Measuring Cylinder
▸ Measurement of Density of Fluids:
  ☛ Basic Concept
  ☛ Concept of Floatation and sinking of a substance (relate to density)
  ☛ Comparison of densities in the three states of matter.
	▸ Revising previous concepts learnt by children.
	▸ Building on children's previous learning.
	▸ Demonstrating the process of measurement of density of an irregular solid.
	▸ Demonstrating the process of measurement of density of a liquid
	▸ Engaging children in practical tasks involving measurement of density of an irregular solid and a liquid
	▸ Engaging children (in groups/pairs/individually) in an investigation to find out which object floats in which liquid, given solids of different densities and liquids of different densities. This is to be followed by discussion.
	▸ Guiding children to predict the result of the previous investigation and comparing predictions with the outcomes.
		▸ Graduated cylinder
		▸ Eureka can
		▸ Graduated beaker
		▸ Water
		▸ Objects of different densities
		▸ Liquids of different densities
		▸ Balance to measure mass
		▸ Objects of irregular shapes
		▸ Video on volume measuring devices
		▸ Video on determination of density of solid and liquid

Life Skills: Cooperation and working together, Problem-solving.
Integration: Chemistry, Technology in daily life.

Theme 3: Force and Pressure

A force is a push or pull upon an object resulting from the object's interaction with another object. Turning effect of a force is more if the distance between the point of application of force and the pivot is more. It is given a special name, Moment of force. Pressure is defined as force per unit area. Solids, liquids and gases, all exert pressure. Atmosphere also exerts pressure.

Learning outcomes:

Children will be able to:

- explain the turning effect of a force, with examples from daily life;
- define moment of force;
- express moment of force in proper units;
- solve simple numerical problems based on moment of force;
- define pressure;
- express pressure in proper units;
- solve simple numerical problems based on formula for pressure;
- describe pressure exerted by a liquid;
- demonstrate that liquids exert pressure;
- describe pressure exerted by a gas;
- describe atmospheric pressure;
- express thoughts that reveal originality, speculation, imagination, a personal perspective, flexibility in thinking, invention or creativity;
- present ideas clearly and in logical order.

Force and Pressure

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Turning effect of force (moment of force): concept, definition and calculation ▸ Pressure: ☛ Definition ☛ Unit ☛ Calculation of pressure in simple cases ☛ Pressure exerted by liquids (Qualitative only). ☛ Pressure exerted by gases- Atmospheric pressure (Qualitative only).	▸ Revising previous concepts learnt by children. ▸ Building on children's previous learning. ▸ Demonstration of turning effect of force. ▸ Explanation of turning effect and factors on which it depends. ▸ Engaging children in task for calculation of turning effect. ▸ Demonstration of pressure exerted by a force on an object. ▸ Explanation: pressure depend on the area of surface on which the force acts. ▸ Demonstration of pressure exerted by a liquid. ▸ Demonstration of pressure exerted by a gas. ▸ Explanation of pressure exerted by atmosphere.	▸ A nut fixed in an object ▸ Spanner ▸ Doors of classroom ▸ Nails ▸ Hammer ▸ Transparent glass tube or plastic pipe ▸ Rubber balloon ▸ Strong thread ▸ Water ▸ A plastic bottle with a hole bear the bottom ▸ Rubber sucker

Force and Pressure		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning resources**
	▸ Engaging children in tasks to show that: (i) pressure depends on area (ii) liquids exert pressure (iii) gases exert pressure. ▸ Observation/Experimentation/ Analysis ▸ Student led experiments (reasoning to be given by children individually) Investigate the effect on pressure when walking on flat shoes and pointed heels on our body support system. For e.g. Children reasoning as to- Why is it easier to hammer a sharp pin respective to a blunt pin?	

Integration: Geography, Technology in daily life.
Life Skills: Cooperation and working together, Problem-solving.

Theme 4: Energy

Building on previous learning on Energy, the emphasis in this class is on the introduction of gravitational potential energy to children. Look at a swinging bob of a pendulum. When it is at its extreme position (the highest point of its motion), it has gravitational potential energy. When it reaches its mean position (lowest point), it has maximum speed and it has high kinetic energy. In this case, one form of energy changes into other, according to the law of conservation of energy. Energy is the ability to do work. Work is said to be done when a force acting on an object changes the position of the object. For the special case when the object changes its position along the direction of the force, work is given by the product of the force and distance moved by the object. But different persons may take different time to do the same work. Rate of doing work is called power. So energy and power are two different physical quantities, having different units. In many situations, the focus is on the power and not energy. For e.g. the power of a motor which works is paid for the electricity consumed, is actually paid for the energy consumed.

Learning outcomes:

Children will be able to:

- define work;
- express work in proper unit;
- calculate work done in simple cases;
- define kinetic energy;
- express kinetic energy in proper units;
- solve simple problems based on kinetic energy;
- define potential energy;
- define gravitational potential energy;
- solve simple problems based on gravitational potential energy;
- describe energy transformation in daily life situation;
- distinguish between energy and power;
- can plan an experimental investigation or demonstration using Scientific processes;
- can identify /select on the basis of attributes.

Energy

Key Concepts	Suggested Transactional Processes	Suggested Learning resources

▸ Concept of Work
▸ Unit of Work (Joule)
▸ Calculation of Work done in simple cases
▸ Kinetic Energy
  ☛ Basic Concept
▸ Potential Energy
  ☛ Basic Concept
  ☛ Gravitational Potential Energy
▸ Calculation of kinetic and potential energies from a set of given data (Simple problems and assuming g=10 m/s²)
▸ Energy transformation in common daily life situations
	▸ Revising previous concepts learnt by children.
	▸ Building on children's previous learning.
	▸ Explaining concept of work done with examples from daily life.
	▸ Calculating work done in simple cases and expressing result in proper unit.
	▸ Explaining of kinetic energy and potential energy
	▸ Explaining of gravitational potential energy
	▸ Solving of problems on kinetic and potential energy
		▸ Video on work done in simple cases from daily life.
		▸ A simple pendulum.
		▸ Video on Kinetic and potential energy.
		▸ Video on transformation of energy.

Energy		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning resources**
▸ Difference between Energy and power	▸ Demonstrating kinetic and potential energy using a simple pendulum ▸ Engaging children in problem solving tasks on KE and PE ▸ Explaining and discussing with children energy transformation in daily life situations / activities. ▸ Explaining the difference between energy and power. ▸ Citing examples of different applications of conservation of energy (roller coaster, production of hydroelectricity etc.) with children making energy conversion diagrams and deducing that energy is conserved.	

Integration: Technology in daily life
Life Skills: Cooperation and working together, Problem solving

Theme 5: Light Energy

An object lying at the bottom of a vessel filled with water usually appear to be at different depth than it actually is. This is due to bending of light rays when it travels from water to air. This phenomenon is called refraction. Light bends when it passes obliquely from one medium to the other. Due to refraction, a mirage is observed on a hot sandy desert. Atmosphere also refract the rays coming from the sun. This causes advanced sunrise and delayed sunset. Previous learning emphasized on reflection of light by a plane mirror. how images are formed by a curved (concave) mirror is now dwelt upon along with rules used to construct ray diagrams.

Learning outcomes:

Children will be able to:

- define refraction;
- discuss examples of refraction;
- describe a spherical mirror;
- describe a concave and a convex mirror;
- define the terms, principal axis, centre and radius of curvature, focus and focal length for a spherical mirror;
- describe rules for making ray diagrams for spherical mirror;
- distinguish between real and virtual images;
- use a ray diagram to show formation of a real image by a spherical mirror;
- describe the characteristics of a real image formed by a spherical mirror;
- describe dispersion of white light by a prism into constituent colours;
- display a scientific attitude while making models;
- show a creative mind set while studying real world optical phenomena;
- communicate logical reasoning and explanations effectively using scientific terms.

Light Energy

Key Concepts	Suggested Transactional Processes	Suggested Learning resources

▸ Refraction:
  ☛ Definition
  ☛ Examples of Refraction.
▸ Curved Mirrors:
  ☛ Convex
  ☛ Concave
  ☛ Reflecting surface (Convex and Concave)
  ☛ Uses of Curved mirrors
  ☛ Terms related to Curved mirrors –Focus, Principal Axis, centre of curvature, radius of curvature
  ☛ Rules for making ray diagrams of Spherical mirrors.
  ☛ Real and Virtual Images
	▸ Revising and revisiting previous concepts learnt by children.
	▸ Building on children's previous learning.
	▸ Demonstrating the phenomenon of refraction
	▸ Engaging children in pairs, individually or small groups in activities related to refraction.
	▸ Explaining refraction with suitable examples.
	▸ Demonstrating how concave and convex mirrors work.
	▸ Representing of concave and convex mirrors through diagrams
	▸ Explaining the terms i.e. Focus, principal axis, centre of curvature,
		▸ A glass slab
		▸ A laser pencil
		▸ White sheet of paper
		▸ Drawing board
		▸ Drawing pins
		▸ Pencil
		▸ Scale
		▸ Eraser
		▸ A glass tumbler with water
		▸ Concave mirror
		▸ Convex mirror
		▸ Candle
		▸ Mirror stand
		▸ Candle stand
		▸ Match box
		▸ Screen with stand
		▸ A sharp pin with stand
		▸ A prism

Light Energy		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning resources**
☛ Ray diagrams with curved mirrors where real images are formed. ▷ Dispersion of white light into constituent colours.	radius of curvature with the help of diagrams to children. ▷ Engaging children in activities related to image formation by a concave mirror using ray diagram. ▷ Explaining real and virtual images. ▷ Demonstrating the dispersion of white light into component colours.	

Integration: Geography, Technology in daily life.
Life Skills: Cooperation and working together, Problem-solving.

Theme 6: Heat Transfer

In both boiling and evaporation, matter changes from liquid to gas. But the two processes are quite different. When temperature of a matter increases, the particles of the matter gain energy and move with greater speed. In evaporation, the particles at the surface escape and form gas. Other particles, inside the liquid, do not have enough energy. So the process of evaporation occurs at the surface. It happens at all temperatures. In boiling, all particles of the liquid are at the same temperature and are involved in the process. It happens in the whole volume of the liquid and it happens at a fixed temperature, particular to a liquid. But before change of states takes place due to supply of heat, there is another effect which is commonly observed. That is the expansion of matter. Matters in all form, except some exceptions, expand on heating. In solids, the effect is less, in liquids more, and in gases maximum. Classification of expansion into three types- linear, superficial and volume are explained with examples from daily life.

Learning outcomes:

Children will be able to:

- compare and contrast Boiling and Evaporation;
- describe thermal expansion of matter;
- describe, linear, area(superficial) and volume expansion;
- compare expansivity in Solids, Liquids and Gases;
- construct models based on scientific process;
- observe and cite multiple physical phenomena from one experiment.

Heat Transfer

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Difference between Boiling and Evaporation. ▸ Thermal Expansion: ☛ Linear Expansion ☛ Volume Expansion ☛ Superficial Expansion ☛ Compare expansivity in Solids, Liquids and Gases. ☛ Examples and real-world applications.	▸ Revising and revisiting previous concepts learnt by children. ▸ Building on children's previous learning. ▸ Demonstrating points of boiling and evaporation. ▸ Engaging children in tasks related to boiling and evaporation. ▸ Explaining the difference in boiling and evaporation. ▸ Demonstrating linear expansion, area expansion and volume expansion through simple experiments for children. ▸ Explaining expansion with the help of examples from daily life activities.	▸ A flask ▸ Tripod stand with mesh ▸ Burner ▸ Water ▸ Experimental set up to show linear and area thermal expansions ▸ Videos on thermal expansion

Integration: Chemistry, Technology in daily life.
Life Skills: Problem-solving, Critical thinking.

Theme 7: Sound

In the previous classes children were made aware of and enabled to understand that a sound wave is characterised by its frequency and amplitude. Parameters that focus on loudness and pitch and are commonly used to characterise sound produced by different sources were also highlighted. The loudness depends on the amplitude, hence when the amplitude of sound is large, sound is loud. Pitch is related to the frequency so when the frequency is high, the pitch is high or the sound is shrill. In this class the theme focusses on showing how sound produced by different musical instruments have different pitch and loudness.

Learning outcomes:

Children will be able to:

- relate pitch and frequency;
- understand pitch and frequency in relation to working of musical instruments. (wind, membrane and string);
- explain mono tone;
- relate loudness and amplitude;
- state the unit of loudness in decibels.

Sound

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
Pitch and Frequency Pitch and frequency in relation to working of musical instruments. (Wind, membrane and String) Monotone Loudness and amplitude unit of loudness in decibels	Revising and revisiting previous concepts learnt by children. Building on children's previous learning Explaining terms related to pitch and frequency. Demonstrating the relation between pitch and frequency Demonstrating of pitch and frequency of some common musical instruments Demonstrating monotone sound Demonstrating the relation between loudness and amplitude Explaining units of loudness i.e. decibel. Engaging children in tasks/ activities related to pitch, loudness, frequency and amplitude. Engaging children in the design of musical toys.	A rubber band A metal tumbler filled with water A pencil Musical instruments Video on Pitch and loudness of sound Video on musical instruments Tuning a guitar using a programme available on the internet

Integration: Music, Technology in daily life.
Life Skills: Cooperation and working together, Problem solving

Theme 8: Electricity

In this theme the aim is to develop the ability to estimate consumption of electricity by knowing the power rating of appliances used. Children will also be able to appreciate and understand the need and importance of taking certain precautions and use of safety devices to protect themselves and others against electrical hazards. Previous learning stressed on electricity due to charges in motion, i.e. current electricity. However, objects can be charged, where charges are static not in motion. This is known as static electricity. This leads to many phenomena in nature, like lightning and thunder during rainy season. How an object that is charged may be detected using a simple device known as an electroscope.

Learning outcomes:

Children will be able to:

- describe household consumption of electricity;
- identify live wire, neutral wire and earth wire in terms of their energy and path they travel;
- describe safety components (fuses, circuit breakers);
- describe phenomenon of static electricity;
- explain conservation of charges;
- describe conduction and induction of charges;
- describe construction and working of an electroscope;
- describe a lighting conductor;
- identify dangers of electricity;
- conduct scientific experiments keeping in mind all the parameters;
- study the impact of energy consumption and draw conclusions from the same and suggest alternate approaches;
- learn the use of safety precautions while dealing with electrical appliances.

Electricity

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Household consumption of electric energy (kilowatt hour) ▸ Identify live wire, neutral wire and earth wire in terms of their energy and path they travel ▸ Safety components (fuses/circuit breakers (Qualitative approach only)/ grounding) ▸ Static Electricity ☛ Conservation of charges ☛ Conduction ☛ Induction ☛ Electroscope (Gold Leaf Electroscope) ☛ Lightning Conductor	▸ Revising and revisiting previous concepts learnt by children. ▸ Building on children's previous learning ▸ Calculating energy consumption using household electricity bills by children. ▸ Helping children identify live, neutral and earth wires ▸ Demonstrating safety components and their uses ▸ Demonstrating static electricity ▸ Demonstrating induction and conduction ▸ Engaging children in activities related to static electricity ▸ Demonstrating the construction and working of an electroscope	▸ Household appliances with rated power ▸ Household electricity bill ▸ Fuses and circuit breakers ▸ Balloons ▸ Threads, Laboratory stands ▸ Video on electricity and safety measures ▸ Interactive Video on static electricity ▸ Interactive video on lighting conductor

Electricity		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning resources**
▸ Battery as a collection of cells connected in series. ▸ Dangers of electricity	▸ Engaging children in design of a simple electroscope ▸ Demonstrating the functioning of a battery ▸ Explaining a lightning conductor and its use ▸ Explaining the dangers of electricity and the safety precautions required	

Integration: Geography, Technology in daily life.
Life Skills: Problem solving, Critical thinking.