Government of Tamil Nadu

REFRESHER COURSE MODULE
2021 - 2022

7

Science

Department of School Education

Content

1 Force and Motion

Learning Outcome:

- Explain process and phenomenon such as force and motion.
- Applies learning scientific concepts in day to day life such as force and motion.

Teacher Activity- 1

- Arrange the students in groups and give them an album showing ploughing the field.
- Teacher discusses with the students on the picture and explains force and motion.

Ploughing the field

Teacher Activity- 2

- Take students to the playground and conduct a running race of 100 metres. Time taken to complete 100 meters distance is noted. Find their speed.

S.No	Name of the Student	Distance (m)	Time Taken in (Seconds)	Speed = $\frac{\text{Distance travelled}}{\text{Time Taken}}$	Speed = $\frac{\text{m}}{\text{s}}$
01	S. Raman	100			
02	R. Senthil	100			
03	A. Kumar	100			
04	C. Murugan	100			

Student Activity - 1

An Object

Kick a ball

A Coconut Falling from a tree

Pushing a Table

- Arrange the students group wise and give a picture album.
- Ask the students to identify the pictures (Rest, Contact force and Non contact force)

Student Activity- 2

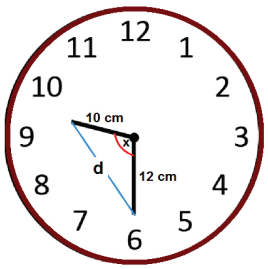
- Ask the students to classify the different kinds of motion with related pictures.

Movement of car on Road

Movement of bus in hill bend

Rotation of fan

Rotation of a top



The tip of hands of a clock

Movement of fish

[Linear Motion, Curvilinear Motion, Circular Motions, Rotatory Motion, Oscillatory Motion, Zigzag Motion]

EVALUATION

I. Choose the Correct Answer :

1. Unit of speed is _____ .

   (a) m (b) s (c) m/s (d) kg

2. The earth rotates from _____.

   (a) East to west (b) West to east

   (c) South to north (d) North to south

3. Revolution of moon around the earth is _____.

(a) Oscillatory Motion (b) Curvilinear Motion

(c) Periodic Motion (d) Rotatory Motion

II. Complete the Analogy:

4. Kicking a ball : Contact force

Falling of leaf : _____

5. Rotatory Motion : A spinning top

Oscillatory Motion : _____

6. Distance : Metre

Speed : _____

III. Fill Ups:

7. Gravitational force is a _____ force.

8. A vehicle moving on a straight road is an example of _____ motion.

9. People walking in a crowded street _____ motion.

10. Motion of the potter's wheel is an example for _____ motion.

IV. Write True or False:

11. SI Unit of distance is kilometer.

12. A child playing in a swing is periodic motion.

13. Vehicles moving with varying speeds are said to be in uniform motion.

14. Flapping of elephant's ears is oscillatory motion.

V. Match the Following :

15. The tip of hands of a clock - Non periodic motion

16. The motion of a train - Circular motion

17. Flapping of a flag in wind - Periodic motion

18. Movement of needle in a sewing machine - Rotatory motion

19. Movement of the wheel - Oscillatory motion

20. Swinging of a pendulum - Uniform motion

2 Electricity

Learning Outcome:

- Classify materials and objects based on observable properties, such as primary and secondary cells.
- Construct models using materials from surroundings

Teacher Activity- 1

- Teacher divides students into four groups and gives some pictures.
- Each groups should comment on the pictures and identify the sources of electricity

Thermal Power Stations

Hydel Power Stations

Atomic Power Stations

Wind mills

Based on students comments, the sources of electricity are explained.

Teacher Activity- 2

- Distinguish between primary cells and secondary cells.

Materials required:

Toys working with battery, wrist watch, cell phone and charger light

Procedure:

Explain primary cells and secondary cells

Primary cells:

Primary cell is designed to be used once and discarded.

Secondary cells:

A cell that can be recharged many times.

All the above said materials are taken to the classroom and distinguish the cells based on their period of working.

Student Activity - 1

- Collect the things from the surroundings and make a simple circuit.

Student Activity- 2

- Using a simple circuit, classify the following things that are good conductors and bad conductors (Nail, comb, coin, rubber, pencil) of electricity.

EVALUATION

I. Choose the Correct Answer :

1. _____ converts chemical energy into electrical energy.

   (a) Battery (b) Television (c) Solar panel (d) Fan

2. _____ fish is able to produce electric current.

   (a) Carp (b) Ketla (c) Eel (d) Solomon

3. _____ is a good conductor.

   (a) Tree (b) Silver (c) Rubber (d) Plastic

4. _____ circuits are used in houses.

   (a) Simple circuit (b) Parallel circuit

   (c) Series circuit (d) None of the above

5. Secondary cell is used in _____.

(a) Wristwatch (b) Laptop

(c) Robot toys (d) None the above

II. Fill Ups:

6. The materials which allow electric charges to pass through them are called _____.

7. Electricity produced from any device is called _____.

8. _____ is a device used to close or open an electric circuit.

9. Electric bulb was invented by _____.

10. Large number of windmills in Kanyakumari district is located at _____

III. Write True or False:

11. Pure water is a good conductor of electricity

12. Secondary cell can be used only once

13. In a parallel circuit the electricity has more than one path.

IV. Circle the Odd One:

14. Key, Electric bulb, Cell, Electricity

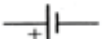
15. Tree, Building, Needle, candle

V. Match the Following :

16.  - bulb glows

17.  - Open key

18.  - Cell

19.  - Bulb does not glow

20.  - Battery

3 Measurement

Learning Outcome:

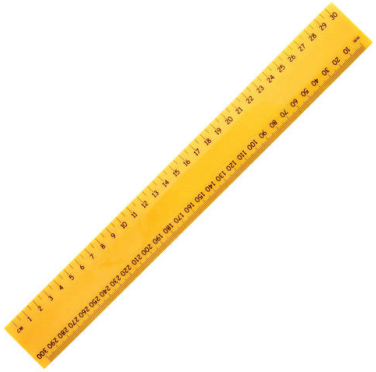
- Measure physical quantities and express in SI units.
- Apply learning of scientific concept in day to day life.

Teacher Activity- 1

- The teacher gives an activity to find the length of irregular shaped leaf.

Materials Needed:

Leaf



a meter scale

a measuring tape

string and sketch pen

Procedure:

Keep a string on a leaf and mark a starting point and end point.

With the help of measuring scale measure the distance between the starting point and end point of the string.

The distance of the string gives the length of the leaf.

Teacher Activity- 2

- Explaining the process of measuring mass by taking students for a field trip.
- The teacher takes the students to the departmental store nearby his/ her school for a field trip. They are asked to observe and note down how all the goods are weighed or measured.
- The students can notice the working of the beam balance and the electronic balance.

Student Activity - 1

- Make the students to sit together in groups and give objects of regular shape to each group (Square, Rectangular, Triangle)
- Ask the students to find out the length and the breadth of the objects with regular shape.

Student Activity- 2

- Construct your own beam balance using two scrapped coconut shells, strings or twines, thick cardboard as frame and a little sharpened pencil as index needle.

EVALUATION

I. Choose the Correct Answer :

1. _____ is used to find out your height.

   (a) Kg (b) M (c) Kilometer (d) Second

2. _____ is used to measure the mass accurately.

   (a) Clock (b) Wrist watch (c) Stop Clock (d) Measurement

3. 5 Kilometer is equal to _____.

   (a) 500cm (b) 500m (c) 5000m (d) 5000cm

4. The volume of the liquid is measured by _____.

(a) Litre (b) Gram (c) Nano (d) Kilo

5. The metric system was created by _____ in 1790.

(a) Italy (b) Australlia (c) Russia (d) French

II. Fill Ups:

6. 20 decimeter is equal to _____.

7. The moons gravitational pull is _____ the earth's pull.

8. 1 meter is _____ centimeter.

9. Quantity that can be measured is called _____.

10. Volume of the irregular object can be measured by _____.

III. True or False:

11. Kerosene is measured by measuring jar.

12. Solid materials take the shape of the container.

13. Electronic balance is used to measure the weight of the object accurately.

14. The SI system of units is accepted everywhere in the world.

15. A hand span is a relatable measure of length.

IV. Match the Following :

16. Kelvin - Distance

17. Meter - Temperature

18. Ampere - Amount of substance

19. Mole - Intensity of light

20. Candela - Current

4 Heat

Learning Outcome:

- Conduct simple investigation to seek answers to queries such as heat.
- Apply learning of scientific concepts in day to day life related to heat.

Teacher Activity- 1

- The teacher explains the term 'heat' as the kinetic energy of molecules in a material with the help of experiment.

Materials required:

Spoon

Candle

Match box

Procedure:

With the help of the candle, heat the spoon at one end. After sometime, the heat can be felt at the tip of the spoon. Teacher explains how the tip of the spoon gets heated.

Teacher Activity- 2

The teacher explains temperature with a simple experiment.

Apparatus required:

Steel tumbler

Hot tea

Procedure :

We feel heat when we lift a tumbler in which hot tea is kept.

This heat is the hotness of the tea kept in the tumbler.

Student Activity - 1

- Take one litre of water in a pan, and heat it on a stove. Calculate the time taken to boil. Take five litres of water in another pan and heat it on the same stove. Calculate the time taken by the water to boil.
- In which pan, the water boils earlier?

☐ One litre water

☐ Five litre water

Both, however show a temperature of 100°C as the boiling point. Five litre water takes more time to boil. (ie) more heat is needed to boil the larger amount of water. So five litres of boiling water has more heat energy than one litre water.

Student Activity- 2

- Hammer a nail into a tin can. Ease the nail out. Put it in again to make sure that the hole is large enough for the nail. Then, holding the nail with a pair of pliers, scissors (or) forceps, heat the nail over a candle in hot water over the stove. Try to put it into the hole in the can.

  I see that : _____

- You will see that, now it is hard to put the nail into the hole. Heat expands solids. The molecules in the solid move faster, spread apart and occupy more space.

EVALUATION

I. Choose the Correct Answer :

1. The normal temperature of the human body is _____.

   (a) 36°C (b) 34°C (c) 37°C (d) 35°C

2. To reduce the temperature of the fruit juice, we add _____.

   (a) Salt (b) Ice (c)Lemon juice (d) Sugar

3. Temperature of object determines the direction of flow of _____.

   (a) Potential energy (b) Kinetic energy

   (c) Light energy (d) Heat energy

II. Fill Ups:

6. Burning of wood, coal and natural gas gives _____

7. _____ is a measurement of average kinetic energy of molecule.

8. _____ is produced when electric current flows through an Iron box.

9. We feel hot when we stand under the _____ light.

10. _____ is a kind of energy.

III. Write True or False:

11. When the object cooled, temperature is increased.

12. During friction of the two surfaces, the heat is absorbed

13. In the past, people used to rub two woods together to light fire.

14. We get light and heat from the sun.

15. The temperature of one object affects the temperature of the other object when they are in thermal contact.

IV. Match the Following :

16.	Heat	-	0°C
17.	Temperature	-	100°C
18.	Thermal equilibrium	-	Kelvin
19.	Ice	-	No thermal conduct
20.	Boiling point of water	-	Joule

5 Matter Around Us

Learning Outcome:

- Classify materials based on observable properties, such as types of matter.
- Identify the characteristics of the particles of matter on the basis of observable features ie appearance, texture, function, aroma etc.
- Conduct simple investigations to seek answers to queries.
- Apply learning of scientific concepts in day – today – life (eg) separating materials.

Teacher Activity- 1

- The material we use are made up of matter. Matter is defined as anything that occupies space and has mass. The teacher explains this by doing some simple activities. For example the teacher keeps some materials such as book, water bottles, bags, air filled balloon, etc. and explains the materials that occupies space and have mass. Asks the students to classify the three physical states of matter.

book

water bottles

bag

air filled balloon

Teacher Activity- 2

- The teacher asks the students to bring some sand from the playground. She explains how to separate iron from sand by doing an experiment. The sand mixed with iron fillings is placed on a paper and the magnet is rolled. Iron is attracted to the magnet, iron is separeted from the soil using a magnet. This method is called magnetic separation. This is explained to students.

Teacher Activity- 3

- The Mixing of inferior substance with food substance is called food adulteration.
- The teacher mixes both pepper and papaya seeds together and explains the children about food adulteration. He/she educates them not to consume adulterated food which will be harmful and poisonous.

Pepper seed

papaya seed

Student Activity - 1

- Classify the following materials as solid, liquid and gas and also fill in the tabular column.

Chalk piece, Smoke, Oil, Brick, Steam, Lemon, Door, Water, Wind, Lemon Juice, Air in a Balloon, Shampoo.

S.No.	Solid	Liquid	Gas

Student Activity- 2

- Collect information from your mother or your neighbour on food stuff and some common adulterants mixed in it. Then share your ideas in the class.

EVALUATION

I) State Whether the Following Statements are True (or) False

1. Air is a mixture.

2. Liquids have fixed shape.

3. Mud pot breaks easily.

4. Light can pass through an iron box.

5. The structure of atoms can be seen by using Tunneling Electron Microscope.

II) Match the Following

6.	Salt is separated from salt water	-	Filtration
7.	Grains separated from husk	-	Churning
8.	Iron fillings separated from sand	-	Winnowing
9.	Tea leaves separated from Tea	-	Evaporation
10.	Butter separated from curd	-	Magnetic separation

III) Fill in the Blanks

11. Highly pure form of gold is _____.

12. Milk is a _____.

13. The method (principle) used in washing machine is _____.

14. _____ is used to separate gravel from sand.

15. Pongal is a _____.

IV) Choose The Correct Answer

16. Name an object which can be bent _____.

    a) Pencil

    b) Rubber band

    c) Wool

    d) Comb

17. Among the following _____ is not a matter.

    a) Electron

    b) Blood

    c) Rock

    d) Moisture

18. The method of separating rava from wheat flour is _____.

    a) Winnowing

    b) Sieving

    c) Filtration

    d) Threshing

19. _____ takes the shape of the vessel.

    a) Solids

    b) Gases

    c) Liquids

    d) None

20. _____ is attracted by a magnet.

    a) Needle

    b) Wood

    c) Pencil

    d) Rubber band

6 Chemistry in Everyday Life

Learning Outcome:

- Classify materials based on observable properties. Such as chemicals used in day-to-day life.
- Conduct simple investigations to seek answers to queries. Such as the function of soaps and detergents.
- Apply learning of scientific concepts in day to day life such as chemistry in everyday life.
- Make efforts to protect environment from chemicals.

Teacher Activity- 1

Preparation of soap:

Materials required:

Water

Sodium hydroxide

coconut oil

Process:

Take 2 ½ cup of water in a plastic container add one cup of sodium hydroxide gradually and stir well. Allow it to cool. Then add 6 ½ cup of coconut oil drop by drop and stir it well until the mixture becomes colloidal stage. Then pour that mixture in a mould. Allow it for 12 hours and leave it. dry. Soap is obtained, and we can use it for cleaning purposes.

Teacher Activity- 2

Field Trip:

The students are taken to the construction site to get exposed to the construction materials such as a mortar, concrete and reinforced cement, concrete and their components and uses.

Student Activity - 1

- Ask your family member and fill in the following table

S.No	Name of the bathing soap	Name of the washing soap

Student Activity- 2

- The teacher asks the students to tabulate the chemicals used in your daily routine

S.No	Name of the chemicals	Uses

EVALUATION

I. Choose The Correct Answer

1. Chemical that is used for making soap is _____.

   (a) Calcium hydroxide

   (b) Sodium hydroxide

   (c) Sodium chloride

   (d) Magnesium chloride

2. Organic fertilizer is _____.

   (a) Urea

   (b) Ammonium sulphate

   (c) Vermin compost

   (d) Super phosphate

3. Natural adhesives are prepared from _____.

   (a) Protein

   (b) Fat

   (c) Vitamin

   (d) Starch

4. _____ is prepared in abundance in Paris.

   (a) Gypsum

   (b) Epsom

   (c) Plaster of Paris

   (d) Cement

5. The change of milk into curd is a _____ change

   (a) Physical change

   (b) Chemical change

   (c) Reversible change

   (d) Irreversible change

II. Fill in the Blanks:

1. _____ is called as farmer's friend

2. _____ chemical is found in onions.

3. Reason for the softness of idly is _____.

4. Example for the artificial fertilizer is _____.

5. When water is mixed with cement, after few minutes the mixture becomes _____

III. Find the Odd One Out:

1. Mortar, Concrete, Reinforced cement, Gypsum

2. Vermi compost, Compost, Urea, Organic wastes

3. Soap, Cement, Starch, Epsom

4. Line, Clay, Brick, Gypsum

5. Nitrogen, Phosphorous, Potassium, Urea

IV. Match the Following:

1.	Fertilizers	-	Cement
2.	Plaster of Paris	-	Natural indicator
3.	Phenol	-	Bone fractures
4.	Gypsum	-	Disinfectant
5.	Turmeric powder	-	Plant growth

7 Changes Around Us

Learning Outcome:

- Classify materials based on observable feature such as reversible and irreversible materials.
- Conduct simple investigation to seek answers to queries eg: Can all physical changes be reversed?
- Classify materials based on properties / characteristics such as physical and chemical changes.

Teacher Activity- 1

There are different types of changes that occur around us. The process in which something becomes different from what it was earlier is called change.

The teacher gives a paper to a student and asks him to make a boat from it. She calls another student to make an aeroplane from the same paper. She calls one by one to make different shapes from the same paper. This means the change of shape discussed here is reversible and it is explained.

Likewise the teacher takes a cup of curd and asks the students from where the curd comes. The students would reply as milk. The teacher asks if we can get milk from a curd again. No, it is impossible. It is explained that the changes which cannot be reversed are known as irreversible changes.

Teacher Activity- 2

The teacher shows some pictures and asks the students to classify them as harmful and harmless to our environment. Then she explains desirable changes and undesirable changes.

Burning of Plastics

Rotting of egg

Germination of seeds

Deforestation

Change of milk into curd

Rusting of iron

Student Activity- 1

Look at the pictures and identify the types of changes.

Student Activity- 2

Fill in the following tabular column.

Incidents	Changes
1. Egg to Chicken	_____
2. _____	Fast Change
3. Melting of ice	_____
4. Digestion of food	_____
5. _____	Physical Change
6. Blackening of Silver ornaments	_____
7. _____	Desirable Change
8. Deforestation	_____

EVALUATION

I. Choose The Correct Answer

1. An example for a slow change _____.

   (a) Bursting of balloon

   (b) Germination of seed

   (c) Melting of ice

2. Burning of a candle is an example for _____.

   (a) Fast change

   (b) Reversible change \

   (c) Chemical change

3. Identify irreversible change _____.

   (a) Stretching of rubber band

   (b) Formation of curd from milk

   (c) Rainfall

4. Drying of wet clothes in air is an example of _____.

   (a) Chemical Change

   (b) Physical Change

   (c) Undesirable Change

5. The changes which are useful to our environment is _____.

   (a) Deforestation

   (b) Rusting of iron

   (c) Ripening of fruit

II. Fill in the Blanks:

1. Glowing of bulb is _____ change.

   (Fast / Irreversible)

2. Changes which can be reversed are _____ changes.

   (Reversible / Irreversible)

3. The changes which are harmful to us _____.

   (Desirable / Undesirable)

4. An example for an artificial change is _____.

   (Construction of buildings / Rotation of the earth)

5. Changes which take place in nature on their own is _____.

   (Human made / Natural Change)

III. Match the Following :

1.	Breaking of glass	-	Chemical change
2.	Digestion of food	-	Fast change
3.	Change of seasons	-	Natural changes
4.	Burning of matchstick	-	Slow changes
5.	Land slide	-	Irreversible change

IV. Analogy :

1. Dissolving of Glucose : Reversible Change

   Digestion of Food : _____ Change

2. Rotting of Egg : Undesirable change

   Growth of Plants : _____

3. Physical Change : Reversible Change

   Chemical Change : _____

4. Bursting of crackers : Fast change

   Germination of seeds : _____

5. Heating of water to change water into water vapour : Evaporation

   Cooling of water vapour into water : _____

8 The world of plants

Learning Outcome:

- Differentiate tap root and fibrous root on the basis of properties, function and structure.
- Relate process and phenomena with causes, (eg) Plant adaptations with their habitat.
- Draw labelled diagrams of a plant.

Teacher Activity- 1

The teacher takes a picture of a plant and cuts it into different parts and distributes them to the students randomly and asked them to describe its importance. A plant has parts like root, stem, leaves, and flowers. The root system helps to fix the plant firmly in the soil, absorb water and minerals form the soil and stores food. The stem protects the plant, conducts water and minerals and stores food. The leaves do functions like preparation of food, respiration and transpiration.

Teacher Activity- 2

The teacher shows the students shoe flower, opuntia, water hyacinth etc and asks them their habitat and their adaptations. Ask the students to classify the plants based on their habitat. They are classified as terrestrial, aquatic and dry habitats.

flower

opuntia

water hyacinth

Student Activity- 1

Visit a nearby nursery garden, identify any 5 plants and their habitats and write down in appropriate column.

S.No.	Name of the plant	Habitat

Student Activity- 2

List out the plants present in your school garden.

EVALUATION

I. Fill in the Blanks

1. Earth's surface is covered by _____ % of water.
2. The driest places on the Earth are _____.
3. Fixation and absorption are the main functions of _____.
4. Primary organs of photosynthesis are _____.
5. Tap root system is present in _____ plants.

II. Choose the Correct Answers

1. Pond is an example of _____ ecosystem

   a) Marine

   b) Fresh water

   c) Deserts

   d) Mountain

2. The important function of stomata is _____

   a) Conduction of water

   b) Transpiration

   c) Photosynthesis

   d) absorption

3. Organ of absorption is _____

   a) Root

   b) Stem

   c) Leaf

   d) Flower

4. The habitat of water hyacinth is ___

   a) Aquatic

   b) Terrestrial

   c) Desert

   d) Mountain

5. A habitat without much water is called _____

   a) Terrestrial

   b) Water

   c) Desert

   d) Mountain

III. State True or False. If false, correct the Statement

1. Plants can live without water.
2. All plants have chlorophyll.
3. Plants have three parts, the root, the stem and leaves.
4. Root is modified into spines.
5. Green plants need sunlight.

IV. Match The Following

1.	Mountain	-	a. Monocot plants
2.	Desert	-	b. Branches
3.	Stem	-	c. Dry Places
4.	Photosynthesis	-	d. Himalayas
5.	Fibrous root	-	e. Leaves

9 The Cell

Learning Outcome:

- Identifies materials and organisms, such as, plant cell and animal cell
- Differentiates materials and organisms such as, plant cell and animal cell on the basis of their properties, structure and function.
- Conducts simple investigations to seek answers to queries, e.g., uses microscope to observe plant and animal cells

Motivation:

- What are the basic building block of wall ?
- What is the building block of your body ?
- What forms the basis for the characters and functions of a living thing?

By asking these questions to students we can know the previous knowledge of students. By this way, cell can be introduced to students.

Teacher Activity- 1

Teacher explains the students 3 important parts of the cells.

1. Cell membrane

2. Cytoplasm

3. Nucleus.

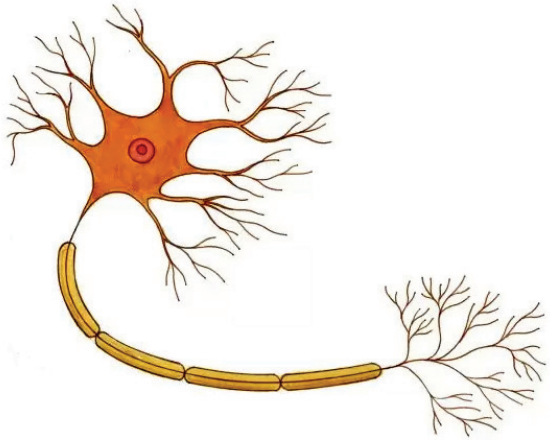
Ex. Crack the Egg shell and place the Egg Yolk in a plate and observe 3 important parts of a cell.

Teacher Activity- 2

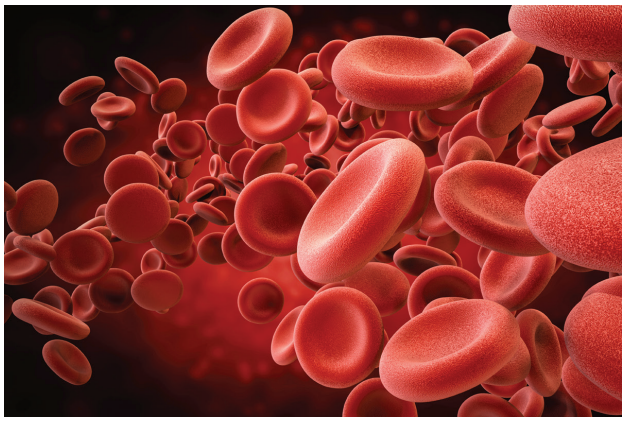
Shapes of Cell, Ranges of Cell Sizes

Teacher explains to the students of the shapes of Nerve cell, Red Blood cell, Muscle cell, and explains the ranges of cell size.

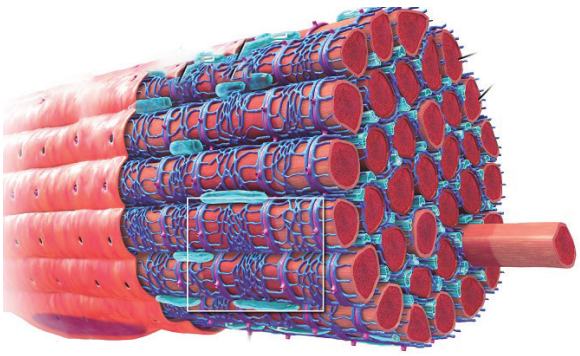
Teacher shows the pictures from small size cell virus to large size cell that in Egg of ostrich. By this students understand Range of cell size is different.



Nerve cell



Red Blood cell



Muscle cell

Teacher Activity- 3

Types of Cells

Teacher explains the students the types of cells.

Prokaryotic cell - No true Nucleus

Eukaryotic cell - True Nucleus

Example

Students are made to observe onion Peel under a Microscope. The students can see rectangular cells of the onion peel, with a nucleus in each of them.

Teacher Activity- 4

Teacher explains to the students the differences between Plant cell and Animal cell. Plant cells are larger than Animal cell, it is hard in nature, it has a cell wall. Plant cells have chloroplast which contain chlorophyll. By this Plants produce their food. Animal cell contain centrioles but chloroplast is absent etc.

Example

Places glass slides of Plant and Animal cells under the Microscope and makes students to observe them.

Students Activity :

Individual Activity :

Draw the structure of Plant and Animal cell and label the parts.

Group Activity :

Divide the students in two groups and make them enact a role of a cell component and its main functions, special name etc.

EVALUATION

I. Choose the Correct Answer

1. Which one of the following is not a unicellular organism ?

a) Amoeba b) Yeast c) Bacteria d) spirogyra

2. The unit of Measurement used for expressing dimension (size) of cell is

   a) Centimeter b) Millimeter c) Micrometer d) Meter

3. Most cell organelles in an Eukaryotic cell is found in the

   a) Cell wall b) Cytoplasm c) Nucleus d) Vacuole

4. Which one of the following cells are the first form of life on Earth?

   a) Plant cell b) Animal cell c) Prokaryotic cell d) Eukaryotic cell

5. Which is the longest cell in our body ?

   a) Epithelial cell b) Nerve cell c) Human cell d) Animal cell

II. Fill in the Blanks

1. The Instrument used to observe the cell is _____
2. _____ protects the cell
3. _____ acts as 'Brain' of the cell.
4. Diameter of Prokaryotic cells ranges from _____ micron.
5. Plants cells have chloroplast which contain _____.

III. Write 'Yes' or 'No'

1. A cell is the smallest unit of life.
2. Nerve cell is the longest cell.
3. Prokaryotes were the first form of the life on the Earth.
4. The organelles of both Plants and Animals are made up of cells.
5. New cells are produced from the preexisting cells.

IV. Match The Following

1. Control Center - Cell Membrane
2. Food Producer - Mitochondria
3. Gate of the Nucleus - Nucleus
4. Gate of the Cell - Nuclear membrane
5. Energy Producer - Chloroplasts

10 Plants in Daily Life

Learning Outcome:

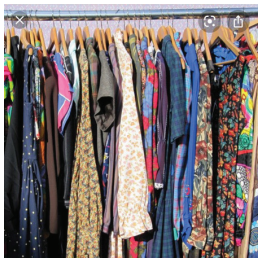
- Identify materials and organisms, such as, plant fibres, flowers, on the basis of observable features i.e appearance, texture, function, aroma, etc.
- Apply learning of scientific concepts in day to day life, e.g., selecting food items for a balanced diet.
- Make efforts to protect environment, e.g., care for plants, prevent soil erosion.
- Exhibit creativity in designing planning, making use of available resources, e.g., making organic fertilizers from decayed plant materials.

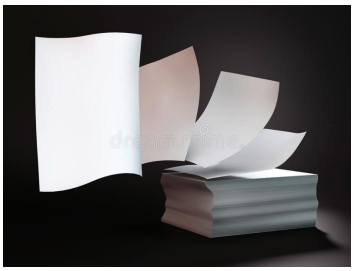
Teacher Activity- 1

- Teacher asks the students to list out the various products that are used at home for example kitchen, bedroom, bathroom etc. Among the various products classify the products that are derived from plants.







- Identify and classify the various types of plants such as food plants (vegetable, grains.Pulses,etc).
- Spice yielding plants (cardamom,Pepper,fenugreek,etc).
- Medicinal plants (Amla, Tulasi, Tuthuvalai, Mudakathan keerai, Adathoda, Nochi, keelanelli, kuppaimeni, etc).
- Fibre yielding plants (cotton, coconut, silk cotton, etc)
- Timber yielding plants (Teak Jackfruit, Bamboo, Sal, Seman Kuchi, Palm tree, Neem tree,etc)
- Ornamental plants (Mullai, Malligai,Chrysanthemum, etc)

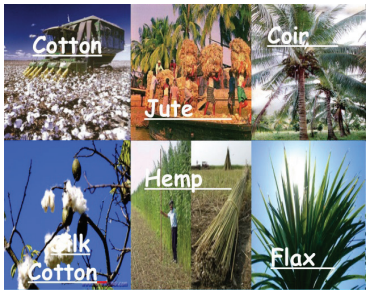
Ask the students to tell the parts of plant that are useful for us from the picture given below

Food plants

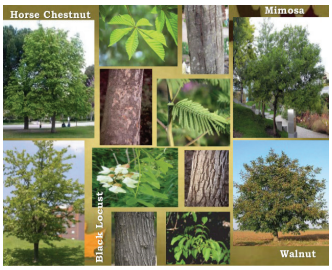
Spices

Medicinal plants

Fibre yielding plants



Timber yielding plants



Ornamental plants

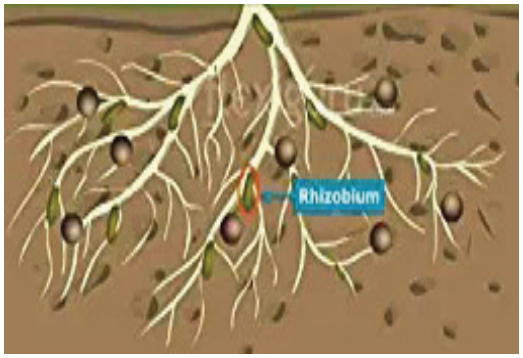
Teacher Activity- 2

- Divide the students into groups, give them the pictures of various useful plants and then ask them to explain each of their benefits to other groups. such as enhancing soil fertility, preventing soil erosion, yield as biofuel etc. Teachers provide additional points to students.

1. What happens after the dried leaves fall in to the soil and rot

2. What causes soil erosion

3. How to stabilize atmospheric N2

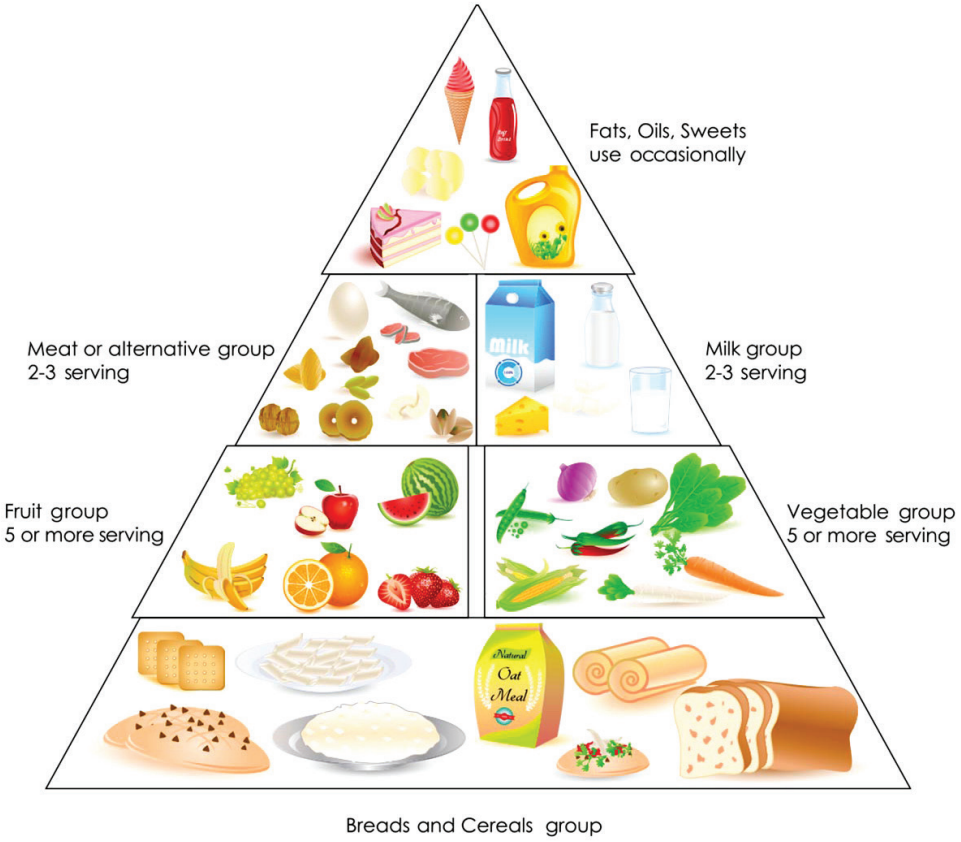


4. What products are made from rubber latex

5. How biofuels are obtained

Teacher Activity- 3

- Present a balanced diet chart to the students and then ask them to map the food item to the corresponding plants



Student Activity

- Ask the students to bring the plants in their neighbourhood and then make them choose the three plants that they like most. Divide them into three groups and then ask them to prepare a herbarium to explain the uses and benefits of those plants.

EVALUATION

I. Choose the Correct Answer

1. Select the nitrogen fixing bacteria from the following.

   a) Bacillis

   b) Salmonella

   c) Pseudomonas

   d) Protozoa

2. Select the group of plants, which are ornamental plants.

   a) Rose, cotton and jasmine

   b) Rose, neem and castor

   c) Rose, mullai and jasmine

   d) Rose, chrysanthemum and ginger.

3. Among the following, which plant is not used to make furniture?

   a) Neem tree

   b) palm tree

   c) banana tree

   d) teak tree

4. Which worm feeds on mulberry leaves.

   a) Round worm

   b) silk worm

   c) Earth worm

   d) tape worm

II. Fill in the Blanks

5. Nochi, Adathoda, Mudakathan keerai, kuppaimeni, keelanelli are examples for _____ plants

6. _____ is a part of the potato plant which is used as food.

7. Raw material for making rope _____.

8. Queen of spices is _____.

III. Match The Following

	Food material	-	**plant parts used**
9.	Saffron, clove	-	fruit
10.	Cardamom	-	bark
11.	Coriander	-	flower bud
12.	Cinnamon	-	seed

IV. Who am I

13. I look like seeds of papaya, I am called as king of spices ,Who am I? _____

14. My leaves,fruits and seeds taste bitter,but people use me as disnfectant and to treat skin diseases. Who am I? _____

V. Find the odd one out

15. Golden shower tree, mandarai, chrysanthemum, karpooravalli.

16. Beetroot, Carrot, Amla, Raddish.

VI. State whether True or false:

17. October - 16 is celebrated as the World Food Day.

18. Floriculture is a part of taxonomy.

VII. Analogy:

19. Bast fibres : flax : husk fibres : _____

20. Cabbage : leaf : yam : _____

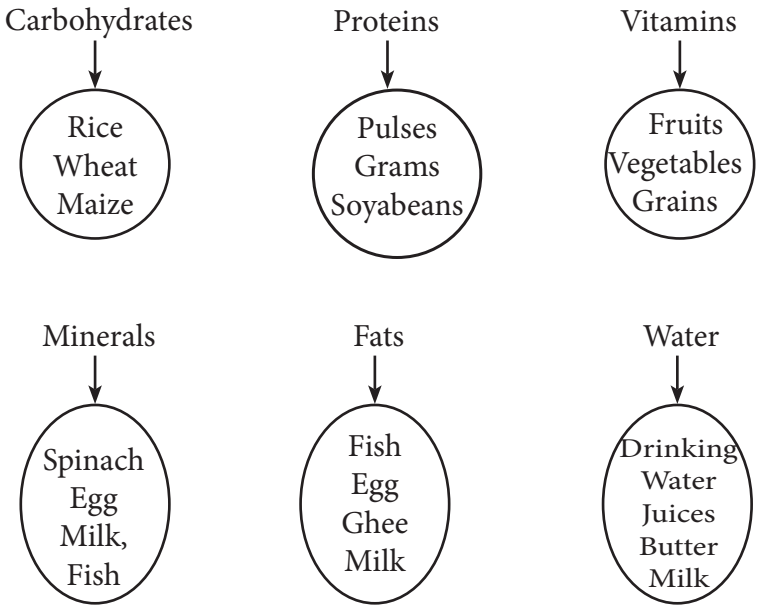
11 Health and Hygiene

Learning Outcome:

- Differentiate materials such as types of foods on the basis of their properties and function.
- Classify materials based on properties, e.g Nutrients.

Teacher Activity- 1

- Teacher explains the students of balanced diet.
- A balanced diet contains sufficient amount of various nutrients to ensure good health. Use the matching circle to the balance diet.



Teacher Activity- 2

Malnutrition

- Malnutrition occurs when all the nutrients that the body needs are not obtained in the proper proportions from the diet. Malnutrition leads to deficiency diseases.

1. Kwashiorkar
   1) Stunted growth
   2) Mental retardation
   3) Swelling of face and limbs.

2.	Marasmus	1) Skinny appearance
		2) Slow body growth
		3) Diarrhoea

Student Activity - 1

- Ask students to write on personal hygiene.

Student Activity - 2

- Divide the students into two groups and ask them to write on the following topic.

Group 1 = Diseases caused due to lake of personal hygiene

Group 2 = Benefits of physical exercise.

EVALUATION

I. Choose the Correct Answer

1. Our body needs _____ for body building.

   a) Carbohydrate

   b) Fat

   c) Protein

   d) Water

2. Scurvy is caused due to the deficiency of _____.

   a) Vitamin A

   b) Vitamin B

   c) Vitamin C

   d) Vitamin D

3. Calcium is an example of a _____.

   a) Carbohydrate

   b) Fat

   c) Protein

   d) Minerals

4. We should include fruits and vegetables in our diet, because ____

   a) they are the best source of carbohydrates

   b) they are the best source of proteins

   c) they are rich in Minerals and Vitamins

   d) They are rich in water

5. Bacteria are very small _____ micro organism

   a) Prokaryotic

   b) Eukaryotic

   c) Protozoa

   d) A cellular

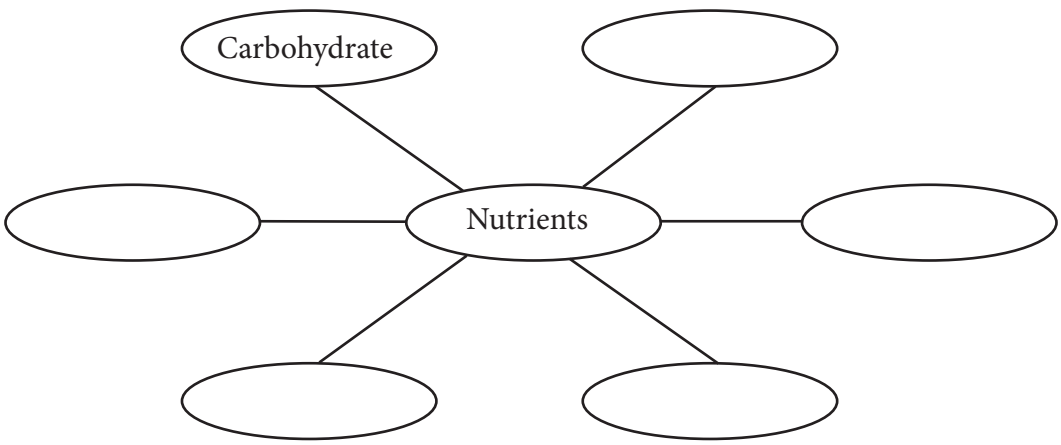
II. Fill in the Blanks

1. Malnutrition leads to _____ diseases.
2. Iodine deficiency leads to _____ in adults.
3. Vitamin D deficiency causes _____.
4. Typhoid is transmitted due to contamination of ____ and water.
5. Influenza is a ____ disease.

III. Match The Following

1.	Vitamin A	-	Rickets
2.	Vitamin B	-	Night blindness
3.	Vitamin C	-	Sterility
4.	Vitamin D	-	Beri Beri
5.	Vitamin E	-	Scurvy

IV. Complete the Diagram



12 The World of Animals

Learning Outcome:

- Differentiate organisms on the basis of characteristics, structure and functions

Teacher Activity- 1

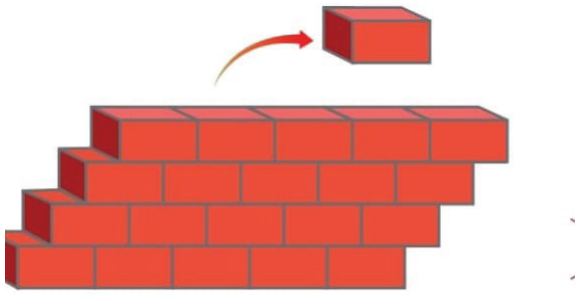
- The teacher asks the students to tell some names of animals they know and asks them to find out if all of these are the same in shape, size, and color.
- Explaining the diversity of animals after learning that there are many types of animals. The basic needs of animals are food and shelter.
- Look at the images below and find out their habitats and their adaptations.

Picture	Habitat	Adaptations
	Desert	Walk with two legs
	Polar region	Strong hooves for running. Long fur to protect from cold
	Mountains	Long eyelids, Closed nostrils, Long legs

	Forest	Strong and fast running ability Sharp claws to catch prey

Teacher Activity- 2

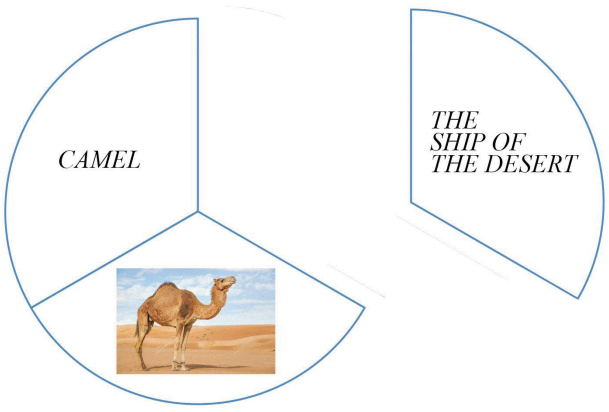
- What materials are needed to build a house – brick, cement and sand. Have you seen the uses of brick pattern used building system while building the house?

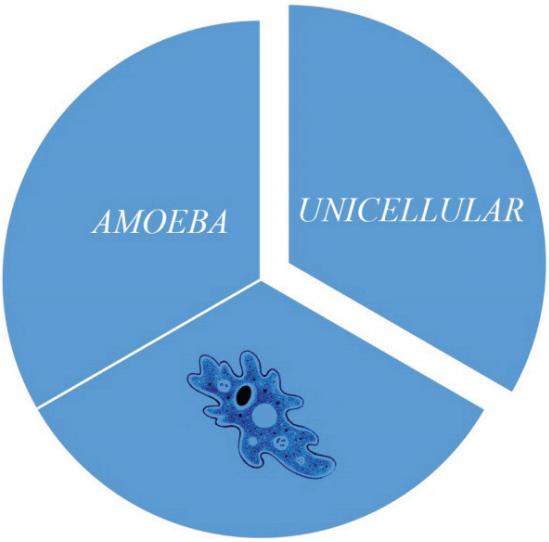


- Just as brick is important to construct a building, so are cells to our body. We cannot see such cells with the naked eye. Can cells be viewed with the help of a microscope?.
- Observation of a single-celled organism, such as amoeba and paramecium, in a glass slide with the help of a microscope.
- Preparation of glass slide (onion peel cell) and observation of the structure of many cells.
- From the observation, distinguishe between single-cellular and multi-cellular organisms.

Student Activity - 1

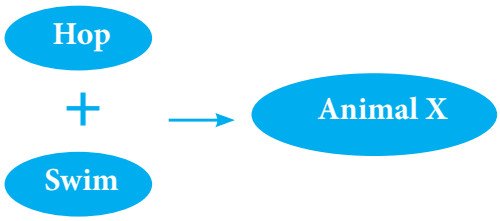
- Arranging the pieces of cards together.





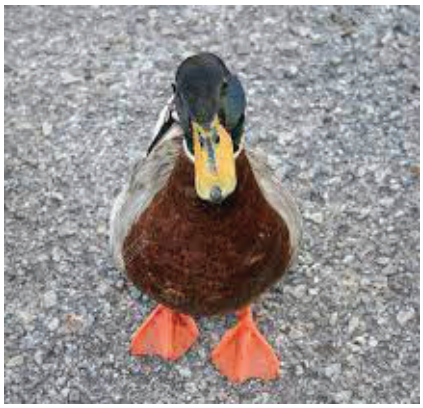
EVALUATION

1. Find the animal below.



a) Rabbit b) Duck c) Frog d) Fish

2. Examine the given image.



What bird is this?

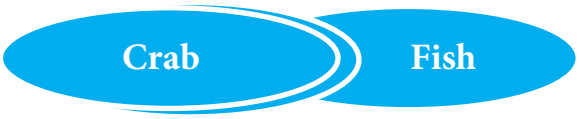
Its legs act as a paddle for swimming in the water.

What can we compare this to?

a) boat paddle b) boat c) ship

3. The property of X is similar to that of aquatic animals such as fish and crab.

   What is that?



   a) The paddles help to swim.

   b) They have backbone.

   c) The gills are used as a respiratory organ.

4. Which of the following animal has adapted to live in the polar regions?

   a) Lion b) Penguin c) Tahr d) Camel

5. Fish always lives in water. Reptiles often lives on land. Animal X lives in water and on land. If the animal is x

   a) Lizard b) Camel c) Frog d) Fish

6. Find the wrong pair.

   a) Hibernation- Tortoise b) Desert – Penguin

   c) Aestivation - Snail d) Mountain area - Tahr

7. Cotton for summer; Wool for winter. Similarly, animals change their location according to the change of seasons. What is the name of it?

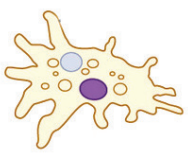
   a) Migration b) Adaptation c) Hibernation d) Aestivation

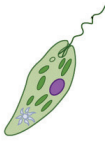
8. An animal x doesn't drink water at all. It absorbs the water it needs from the food it eats. If x is ----------

   a) Kangaroo rat b) Man c) Lizard d) Earthworm

9. How do you calculate your age? Is it possible to calculate the age of a fish like that?

10. Eight-legged insect, Does it belong to insect species?

11.  Uses pseudopodia (false foot) for movement. What is this?



Uses cilia for movement. what is this?

How does movement take place in the given organism?

12. One of the following adaptations is similar among them. Pick the odd one out.

    a) Bird, fish, penguin

    b) Fish, snake, bird

    c) Bird, frog, penguin

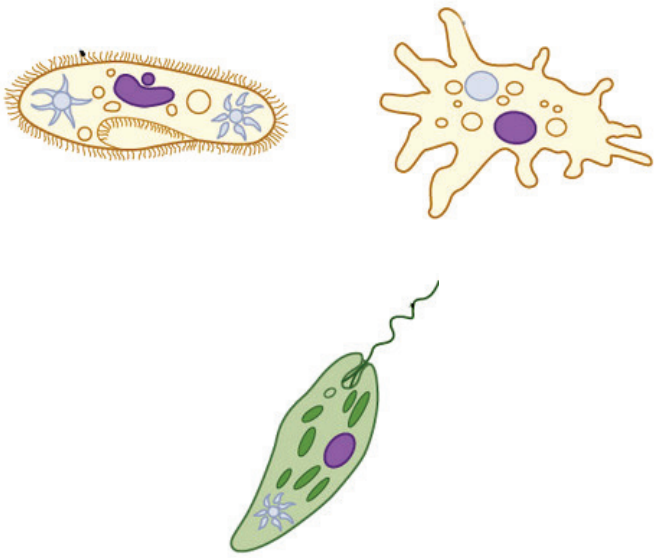
13. The fish dies as soon as it reaches the ground. Why?

14. The change in the body color of certain organisms to suit the surrounding environment is seen as an adaptation. So when the chameleon sits on a tree branch, its color becomes green. Is it correct ?

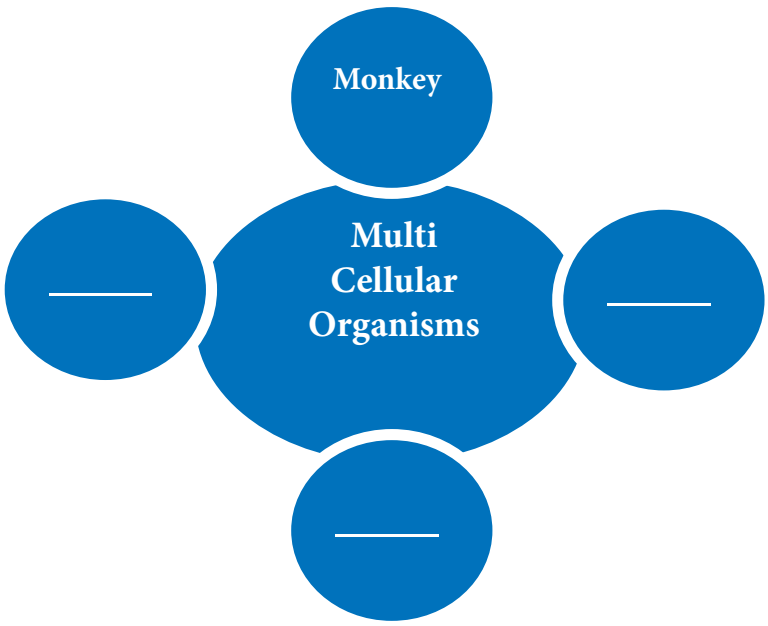
15. My structure is like an aeroplane that can tear through the air when I go up high. Who am I?

16. Is egg single-celled or multi- celled ?

17. I protect your feet. I am also called as slipper in English. There is a microbe having the structure just like me. Answer the question by observing the images given below.



18. Fill in the following.

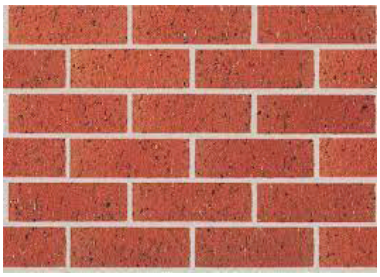


13 Human Organ Systems

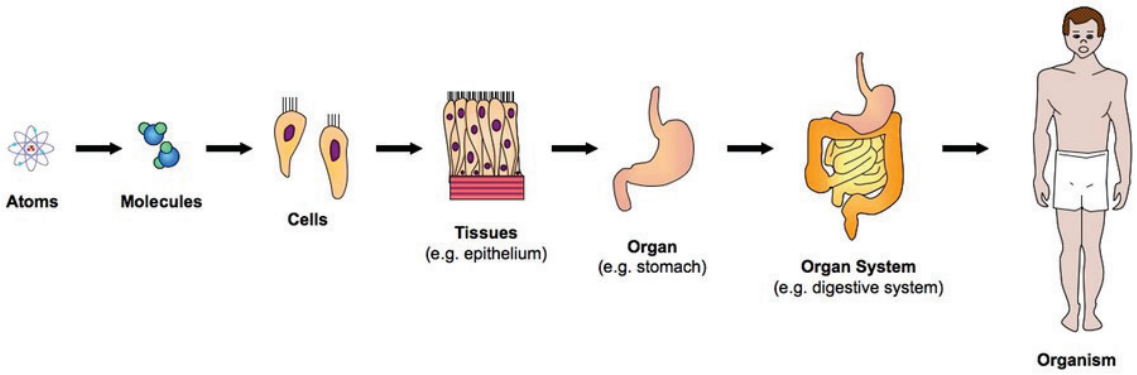
Learning Outcome:

- Explain process and phenomena. e.g organs and systems in human, organs, etc
- Drawing labelled diagrams / flow charts e.g. organ systems in humans.

Teacher Activity- 1



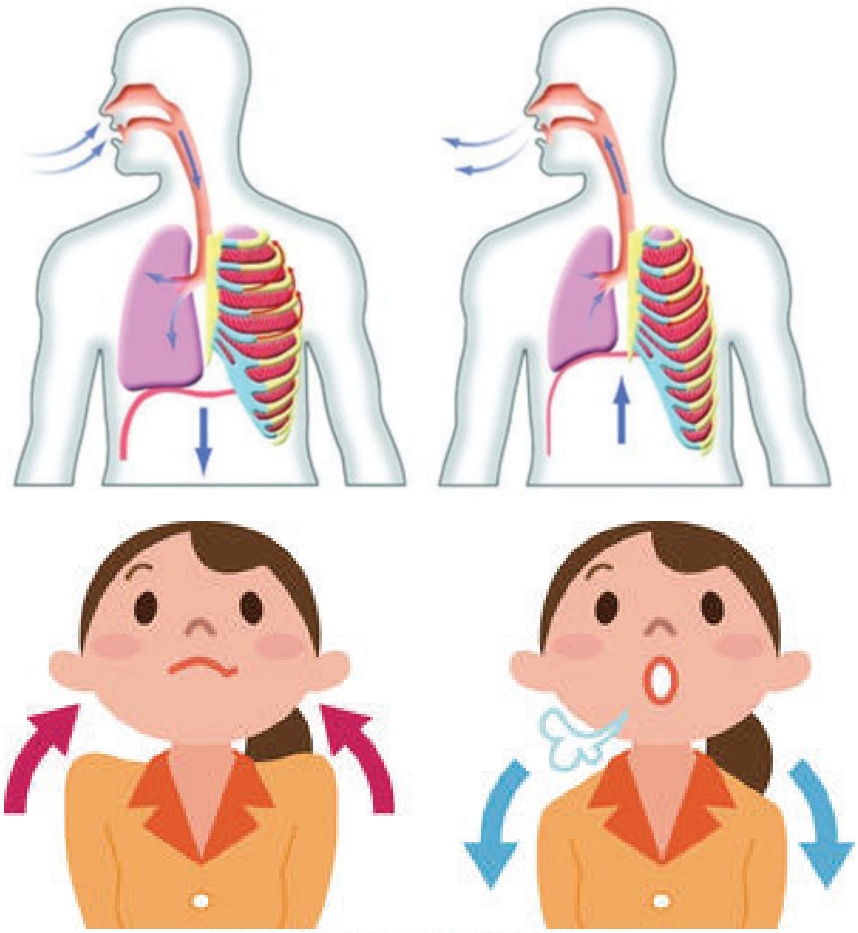
Observe the pictures and correlate the relationship between them. A group of organs work together to perform a particular function. It is known as an organ system. Those organ systems combine to form an organism.



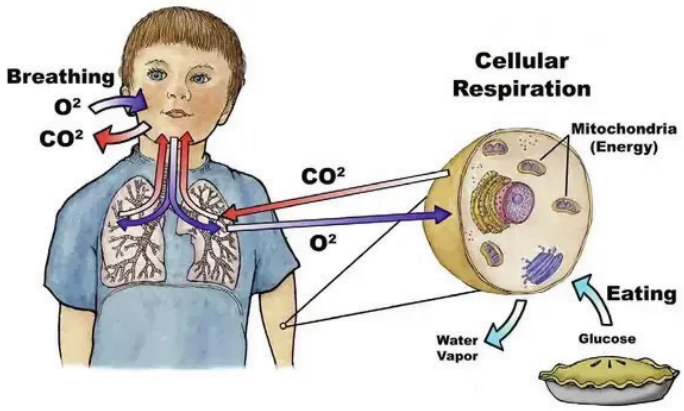
- Find the structure of the human organ system by arranging the given pictures, correctly. Name and identify the organs of the human organ system using a spiral card.
- The human body system using the URL https://www.healthline.com/health/humanbody.maps

TeacherActivity - 2

- Making the students to inhale and exhale the air slowly and to say what they felt through this act.
- Breathing - Inhalation and exhalation.



Respiration - When we breathe in, we inhale more O_2 and when we breath out, we exhale more Co_2



Aim:

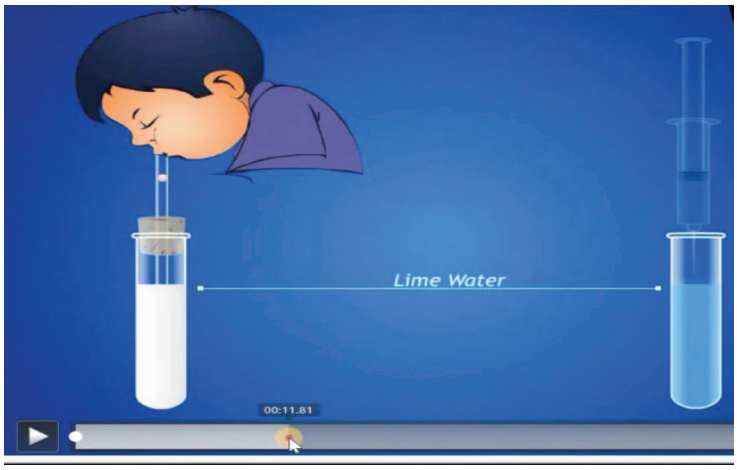
To examine that exhaled air contains more amount of CO_2.

Materials required:

Two glass cups with cover, straw and lime water

Method :

Pour lime water into both the jars and close it with the cover . Leave the first jar intact. Make a hole in the cover of the second jar and then blow air into it. Observe the changes.



Observation:

The lime water in the second glass is like milk. Only carbon-di-oxide CO_2 is able to convert lime water milky.

Results

It is possible to know that the air exhaled is high in carbon dioxide.

Student Activity - 1

A person inhales and exhales 16 to 18 times per minute on an average.

Usually we do not notice breathing. You can count your breathing rate if you try. Breathe in and out normally. Find out how many times you inhale and exhale in a minute. Is the amount of air you inhale and the amount of air you exhale the same?

Compare and schedule your breathing rate under different conditions,

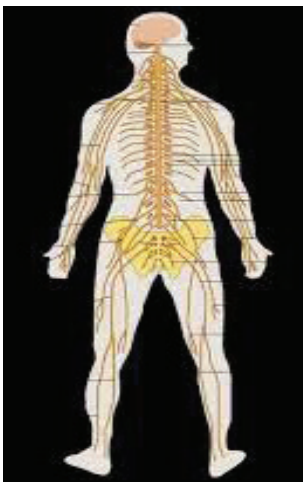
	Respiratory rate			
Friend's Name	Normal level	after 10 minutes of brisk walking	after running 100 m	At rest

EVALUATION

1. Ramu met with an accident and had a fracture. Which one of the following helps in the diagnosis of fracture by the doctor.

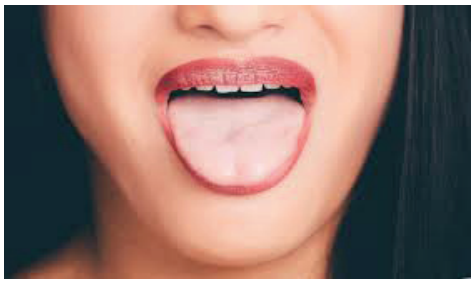
   a) Urine report b) x-ray c) Blood sample d) Scan report

2. Observe the given image.



   a) excretory system b) nervous system c) respiratory system d) digestive system

3. Somu suffers with sudden dizziness while he went for trekking. Which of the following organ helps him to keep his body in balance?

a) 

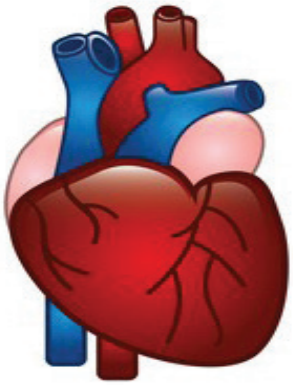
b) 

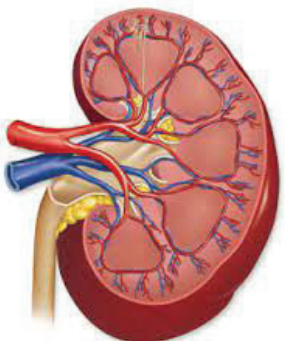
c) 

d) 

4. I am the lifeline of a person's body. I pump the blood evenly throughout the body. If I stop working, that person will die. So who am I?

a) 

b) 

c) 

d) 

5. X is the coloured part of the human eye. It regulates the amount light passes through the pupil. Then the x is

a) Cornea b) Iris c) Retina d) Lens

6. Look at the picture and respond.

I protect the heart and the lungs. I have curved bones which are fused firmly together.

Who am I?

7. Which function of the skeletal system would be particularly important if a person 'x' is met with a car accident?

a) Storage of mineral salts b) Storage of fat

c) Protection of internal organs d) Operational facility

8. I protect the brain. I am made up of bones which are fused firmly together to form a shell-like structure.Who am I?

a) skull b) ribs c) sternal ring d) pelvic ring

9. The camera is a tool that helps to take photographs. Similarly, an organ in the human body acts like a tool to take photos. What is that organ?

10. Look at the pictures below and answer.

a) The skeleton gives shape to the body.

b) The bones protect the internal organs.

c) The skeleton moves with the help of joints and muscles

d) All of the above

11. I am a sensory organ. When I'm measured in length I am equal to the length of the thumb of that person. Who am I?

_____

_____

12. Hydrochloric acid in the stomach helps in digestion of food and destroys harmful bacteria. What will happen if HCl is not secreted in the stomach?

_____

_____

13. Mala falls down while walking on the street. Her leg gets wounded and starts bleeding. After a while the bleeding stops. What are the blood cells that cause blood clotting?

(i) red blood cells (ii) white blood cells

(iii) blood platelets (iv) plasma

a) (i) and (iii)

b) (ii) and (iii)

c) (iii) only

d) (ii), (iii) and (iv)

14. A man consumes high amount of protein in his diet. He is likely to excrete more amount of

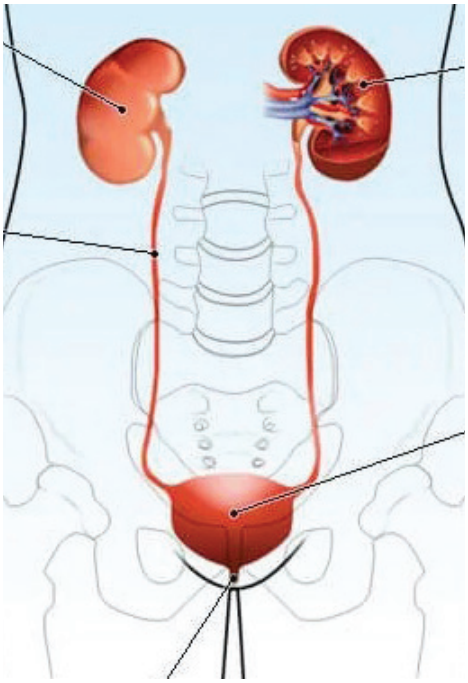
    a) Water

    b) Glucose

    c) Urea

    d) Salts

15. Observe the given image.



    a) The right kidney and the left kidney are at the same level.

    b) The right kidney is slightly lower than the left kidney.

    c) The left kidney is found slightly lower than the right kidney.

16. Raja is very tired when he returns from a wedding. Which of the following muscles makes him tired quick?

    a) Skeletal muscles b) Soft muscles c) Heart muscles d) All of the above

17. While Rani and Latha are having lunch, Latha is talking and eating. Suddenly, Latha gets choked. What is the reason?

    _____

    _____

    _____

18. When Gopal is at rest, his pulse rate is 72-80. What is his heart beat rate if his pulse rate is 80-85 after walking a short distance and returning?

_____

_____

_____

19. I am a vitamin.When stood under the sun for a while in the morning I will be synthesized in a required amount for the body. Who am I?

_____

_____

_____

20. Fill in the following.