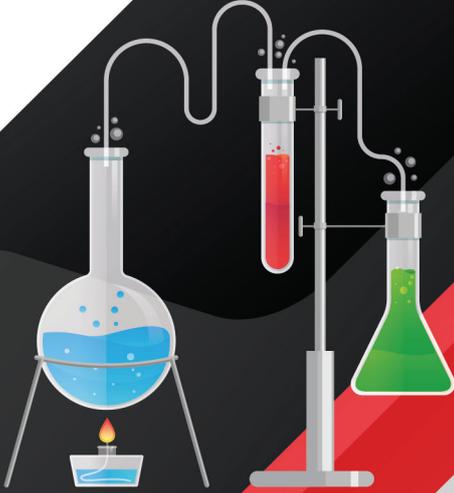




Professional Development  
for Quality Education

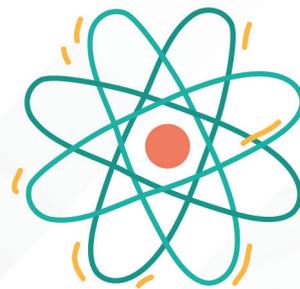
GRADE **5**



# GENERAL SCIENCE

## Lesson Plans

Based on Curriculum 2020



Directorate of Curriculum and Teacher Education (DCTE)  
Khyber Pakhtunkhwa, Abbottabad

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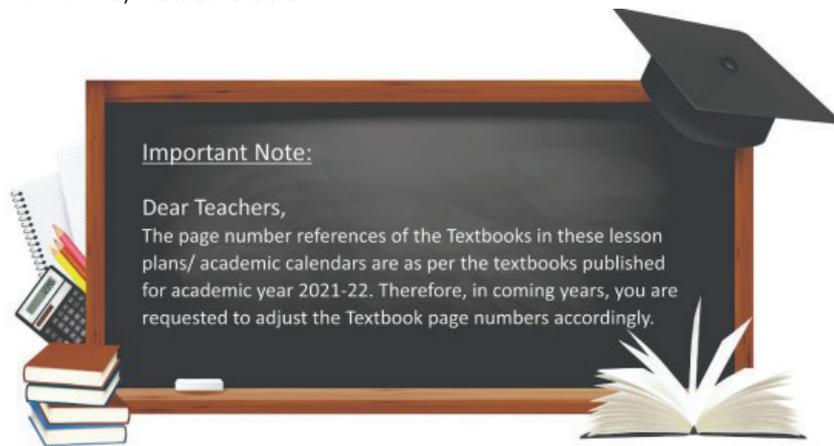
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**NOTIFICATION:**

**No.5073-5235/F.24/Vol-II/SLP/G-V/SS-M&E, dated: 30-08-2021** : Consequent upon its development and review by the respective development and review committees notified for the purpose, the Directorate of Curriculum and Teacher Education (DCTE), Khyber Pakhtunkhwa, Abbottabad, being the competent authority under the Khyber Pakhtunkhwa Supervision of Curricula, Textbooks and Maintenance of Standards of Education Act 2011, is pleased to notify the scripted lessons for Grade-V in the subjects of English, Urdu, Mathematics and Social Studies based on Curriculum 2020 and the textbooks aligned on it for all educational institutions in Khyber Pakhtunkhwa for the Academic year 2021-22 and onwards.

**DIRECTOR**

Copy forwarded for information and necessary action to the:

1. Secretary, Elementary & Secondary Education Department Govt. of Khyber Pakhtunkhwa, Peshawar.
2. Director, Elementary & Secondary Education Khyber Pakhtunkhwa.
3. Director, Professional Development, Khyber Pakhtunkhwa Landey Sarak Charsadda Road Larama, Peshawar.
4. All District Education Officers (M/F) in Khyber Pakhtunkhwa and Newly Merged Districts (NMDs).
5. PS to Minister, Elementary & Secondary Education Department Govt. of Khyber Pakhtunkhwa, Peshawar.
6. All Sub Divisional Education Officers (M/F) in Khyber Pakhtunkhwa and Newly Merged Districts (NMDs).
7. Team Leader ASI-KESP, at PC Peshawar.
8. PS to the Director Local Office.

**ADDITIONAL DIRECTOR (SS)**

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# INTRODUCTION

Teaching and learning process in the classroom can vary concerning the ability, experience, and training of the teacher, which is why to standardize instruction, every good and effective teacher requires a lesson plan. The preparation of a lesson plan is important for clarity and comprehension regarding how the entire learning process will be handled as well as how students can understand and store the knowledge that is being passed onto them.

Lesson plans are vital for helping students accomplish their goals within a learning environment on a short-term and long-term basis. Lesson plans based on clearly defined Student Learning Outcomes (SLOs) concerning the textbooks ensure students are taught the required curriculum most efficiently. These ensure the teacher is adequately prepared and has a clear sense of direction for their lessons. In the context of Khyber Pakhtunkhwa, Lesson Plans are designed to support teachers to implement new pedagogical methods and help provide direction to instruction in the classrooms.

## Traditional Teaching Style:

Many teachers in Pakistan have come to rely on the textbook for teaching. They come into the classroom, ask students to open the textbook on a certain page, have students read a portion of the text, paraphrase the same and then ask students to answer questions that require them to reproduce material from the text. They teach every subject (the exception being mathematics) and every lesson in the same way. In some cases, the teacher is unable to complete the curriculum or impart the SLOs for a particular grade to the students effectively. Using lesson plans ensure standardization in teaching quality and provides a clear goal with relevant activities that can help students learn more effectively and achieve curriculum milestones.

## What is a Lesson Plan?

A lesson plan is a description of the instructions for the purpose of teaching the contents of the textbook of a particular subject and achieving Student Learning Outcomes (SLOs).

A lesson plan is the road map for teachers for the achievement of SLOs effectively during class time. The teachers design appropriate learning activities and develop strategies to obtain feedback on students' learning. A carefully constructed lesson plan allows the teacher to enter the classroom with more confidence and maximizes the chance of having a meaningful learning experience with the students.

A successful lesson plan addresses and integrates three key components:

- ◇ Student Learning Outcomes (SLOs).
- ◇ Learning activities.
- ◇ Assessment to check for students' understanding.

## Benefits of Lesson Planning

Most important benefits of lesson planning are to:

- Improve the quality of teaching and learning.
- Establish clarity of purpose.
- Facilitate achievement of student learning outcomes.
- Use available time effectively.
- Develop appropriate materials and ensure their effective use.
- Develop the confidence of teachers.

## Development Process of a Lesson Plan

Lesson plan usually starts with a thinking process. This thinking process is basically completed in four parts.

- **First**, determine the SLO; that is, what the children will learn, what they will be able to do upon completing the activities or work of the lesson.
- **Second**, determine what the students already know, before beginning of the lesson that can lead into a new curriculum of the day.
- **Third**, determine at least one way to assist the students in learning the new curriculum.
- **Fourth**, determine a way to evaluate the learning outcomes of the students.

## Components of a Lesson Plan

Common elements of lesson plans are; unit of study, a title/topic/problem, identification of student learning outcomes (SLOs), a sequence of learning activities including introductory, developmental and concluding activities, list of materials to be used and assessment strategies.

- ◊ **Choosing the Topic.** You can choose any topic from the textbook of the designated grade, a skill such as information gathering, a value such as peace, a current affair topic or an area of special concern such as the environmental pollution etc.
- ◊ **Identifying Student Learning Outcomes (SLOs) from the Curriculum.** The Curriculum has identified the student learning outcomes to be achieved for each topic. Identifying the student learning outcomes will help you to clarify the knowledge, skills, attitudes and values to be developed. Choose only one to three SLOs to develop your lesson (many more for a unit plan).
- ◊ **Material Resources.** A key part of planning is to ensure the identification, adaptation and development of resources required for the lesson for both teachers and students.
- **Development:**
  - ◊ **Introductory Activities:** Introductory activities are designed to introduce the topic, a subtopic or establish connection with the previous lesson. They are designed to build readiness, create interest, raise questions and explore what children already know about the topic, recall relevant information, motivate students and focus their attention on the topic/theme/problem to be studied. Introductory activities can include an arrangement of pictures or activities that stimulate interest and questions. Others may be based on the teacher posing questions, reading a poem or story on the teacher posing questions or reading a poem, story, etc. A test, an inventory, or a quiz may be used to find out what students know in order to build on their existing knowledge.
  - ◊ **Developmental Activities:** Developmental activities should emerge out of the introductory activities. There should be smooth transitions between the activities to provide a smooth learning sequence. These activities are designed to actualize the student learning outcomes. They introduce new concepts, skills and values or build on past learning and should be linked with each other. Applicative or demonstrative activities extend learning and develop the ability to use concepts and skills. Creative and expressive activities enrich learning and develop the ability to improvise and apply learning in original ways.
  - ◊ **Concluding the lesson:** Conclusion includes activities that serve to consolidate, summarize, or facilitate application of knowledge and skills of students to a new situation. They are generally related to the main idea of the lesson. The concluding activities could bring together the different main ideas of the unit. In this case, the emphasis should be on the educational outcomes and not on “putting on a show”.
  - ◊ **Assessment of Learning.** Assessment strategies can tell us how well or to what extent the student learning outcomes have been met. Assessment of learning is important in all phases of the lesson/unit from introduction to conclusion. A variety of tools can be used to assess the realization of the chosen learning outcomes. Some of these will be prepared as part of the learning activities. For example, the drawing and labeling of a map, the checklist for evaluating a discussion or simply asking questions relevant to the day’s topic. Other tools such as tests can be prepared ahead of time as well.
  - ◊ **Follow up/homework task.** This component includes follow up activities or home assignments to be undertaken by students at home.

# PREFACE

The Government of Khyber Pakhtunkhwa, Elementary and Secondary Education Department, is committed to improve the quality of teaching and learning by taking a number of reforms and initiatives for the improvement of quality education in line with the national and international emerging trends. Providing quality education at primary level is the first imperative step towards achieving this goal.

For this purpose, the Directorate of Curriculum and Teacher Education Khyber Pakhtunkhwa, at Abbottabad, has been entrusted the responsibility of developing and reviewing teachers' in-service and pre-service training materials for the improvement of pedagogical skills of teachers.

These quality improving initiatives also include development of teacher's guides of scripted lesson plans at primary level that support teachers to implement new pedagogical methods. These teacher guides are intended to assist teachers with the provision of content, effective teaching methods and tools for measuring what learners have gained. These guides will ensure an effective and participative engagement of teachers with students as activities included in these lesson plans are student-centered.

These teacher guides of Lesson Plans based on Student Learning Outcomes (SLOs) of Curriculum 2006 were developed for the first time in 2013. In 2018-2019, the Directorate of Curriculum & Teachers' Education Khyber Pakhtunkhwa undertook the task to revise and develop the Scripted Lesson Plans for Grade I-III according to the Academic Calendar on missing Students Learning Outcomes (SLOs).

As the Curriculum has been revised and new textbooks are developed in 2020 for Grades Pre-I to V, hence the need has been felt that these Lesson Plans for Grades I to V are to be revised, developed and aligned with the updated Curriculum 2020, accordingly.

The Directorate of Curriculum and Teacher Education Khyber Pakhtunkhwa constituted different committees comprising of Curriculum/Subject experts and teachers for developing these Lesson Plans based on Curriculum 2020. DCTE acknowledges the efforts of these experts for developing and reviewing these scripted lesson plans.

The Directorate of Curriculum and Teachers Education Khyber Pakhtunkhwa is also thankful to the Technical Assistance of Khyber Pakhtunkhwa Education Sector Programme (KESP) in the finalization of these lesson plans.

**Gohar Ali Khan**  
Director,  
Curriculum and Teacher Education  
Khyber Pakhtunkhwa, Abbottabad.

**Month**

**1**

# CLASSIFICATION OF ORGANISMS



## STUDENT LEARNING OUTCOMES

Describe classification of organisms and its importance.

## INFORMATION FOR TEACHERS

- Follow the given instructions before teaching the lesson.
1. Read the topic from the textbook for developing a holistic picture and better understanding.
  2. Ensure safety measures while students perform activities in the group.
  3. Plan and arrange the materials required for activities.
  4. Use suitable methods for teaching the topic such as activity methods, lecture cum discussion, demonstration, project method, etc.

**Keywords** Classification, organism, characteristics and group.

**Skills** Classification, observation, inferring



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Writing board, marker, chalks, duster, charts of animals and plants, General Science Textbook Grade – 5.



## INTRODUCTION

5 MINUTES

1. Ask students to name living and nonliving things present in the surroundings.
2. Show the pictures of some animals, plants, and nonliving things in class.
3. Make a table on the writing board with two columns and ask the students to place the names of animals, plants in the living column and nonliving things in the respective column.

Living Things	Nonliving Things

4. After discussing living and nonliving things, announce the topic as “Classification of Organisms”.

**Activity 1:**

1. Perform activity 1.1 on page 2 of the General Science textbook for Grade 5.
2. For explanation perform the following activity.

**Activity 2:**

1. Show charts having pictures of plants (small and large plants) given below.



2. Ask students to classify plants, based on their sizes, whether they are small or large.
3. Ask questions like;
  - ◇ What is on the chart?
  - ◇ How did you classify or group plants? (Discuss based on sizes)
4. Explain to students that putting organisms into separate groups based on similarities and differences is called the classification of organisms.
5. Ask the students to classify the different items in their school bag.
6. How did you classify different items in your school bag?
7. Similar items are placed in one group and those items which are not similar are placed in another group.
8. Do you find any benefit of this classification?
9. Explain the importance of classification;
  - ◇ On the basis of classification, we can determine the similarities and differences among organisms.
  - ◇ We can identify organisms easily.
  - ◇ Know the relationship among organisms.
  - ◇ When we study the characteristics of one organism, the same characteristics may be given to a similar organism.

### Activity 3:

Divide the students into five groups. Assign one kingdom of the following to each group.

- ◇ Monera
- ◇ Protista
- ◇ Fungi
- ◇ Plantae
- ◇ Animalia

Students will work in groups and each group will list the characteristics of one kingdom while reading from the textbook.

Each group will present their allocated kingdom to the class with simple drawings.

Explain and summarize the Five Kingdoms System.

### Recapitulation

What is an organism?

What is classification?

Write down the names of the Five Kingdom System?



### CONCLUSION / SUM UP

3 MINUTES

- Ask the following questions from students:
  1. Define classification?
  2. Why classification is important?
  3. Name some characteristics of plants and animals that are important for classification.



### ASSESSMENT

5 MINUTES

Ask the students to write down any three characteristics of plants and animals in the notebook.



### HOMEWORK / FOLLOW UP

2 MINUTES

Ask the students to collect pictures of 5 animals and 5 plants and name them and also paste them in their notebook.

# CLASSIFICATION AND CHARACTERISTICS OF FLOWERING PLANTS



## STUDENT LEARNING OUTCOMES

- Classify the plants into two major groups (monocots and dicots) and give major examples of each group.
- Compare and contrast the structure of a monocot and dicot plant (with respect to their seeds, leaves and flowers).

## INFORMATION FOR TEACHERS

Follow the given instructions before teaching the lesson:

1. Read the textbook and topic fully, also use available additional resources to develop the holistic picture.
2. Keep in view the safety measures while students perform activities in the group.
3. Plan and arrange the material needed for activities.
4. Know the detailed explanation of the contents.
5. Use any suitable method from the given list.
  - ◇ Activity-based method
  - ◇ Lecture cum discussion
  - ◇ Demonstration
  - ◇ Project method

**Keywords** Flowering plants, monocot, dicot, cotyledons

**Skills** Classification, observation and inferring.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Writing board, marker, chalks, leaves of plants, seeds of plants, etc. General Science Textbook Grade - 5.



**INTRODUCTION**

5 MINUTES

1. To create an environment suitable for teaching/ learning ask few questions like:
  - ◇ What is classification?
  - ◇ Why we divide organisms into different groups?
  - ◇ What do you think; can plants be divided into different groups?
2. Announce the topic that today we will discuss the "classification and characteristics of flowering plants".

**Activity 1:**

1. Divide the class into two groups and give them pictures of different plants and ask them to observe the characteristics and structure of plants.
2. Assign to Group-1 the flowering plants and to group-2 the non- flowering plants.
3. Now ask both the groups to present their observations one by one in front of the class and complete the table and record the observations on the board.

S No.	Characteristics	Flowering plants	Non-Flowering plants
1	Has flowers	Yes	No
2	Has fruits	Yes	No
3	Example	Apple, wheat	Ferns, conifers

4. Ask questions to explain the main characteristics of plants
  - ◇ How do plants differ from one another?  
(They may be different based on their sizes, structure, some bear flowers and some do not bear flowers).
  - ◇ How did you classify plants?
  - ◇ What are flowering plants?
5. Assign activity 1.3 on page # 6 of G.S textbook Grade-5 to the students. Provide help and instructions to the students while performing the activity.

**Activity 2:**

- To discuss the structure of dicot and monocot, the following activity is to be performed  
Divide the students into appropriate groups
1. Each groups is to be given seeds of different plants like maize, bean, rice, wheat, pea, and gram, etc.
  2. Ask students to collect the following information about seeds:
    - ◇ Observe the internal and external structure of the seed.
    - ◇ Remove the upper layer/cover of the seed and observe its internal structure.
    - ◇ Now give some more seeds to the students and observe their internal and external structure.
    - ◇ A cotyledon, or seed leaf, is a leaf that is stored in a seed. When the seed sprouts, the cotyledons are the first leaves that the plant has.
    - ◇ Infer; some seeds have two cotyledons, and some have one cotyledon, the seed with one cotyledon is a monocot and the seed with two cotyledons is a dicot.

**Recapitulation:**

- Ask few questions to check the understanding of the students.
  - ◇ What is a monocot seed?
  - ◇ What is a dicot seed?



- To check the students learning ask the following questions.
  - ◇ Define flowering plants
  - ◇ What is cotyledon?

- ◇ Which plants bear flowers?
- ◇ What do you think are all plants similar to one another?
- ◇ Why we classify plants?



### ASSESSMENT

5 MINUTES

Classify the given dicot and monocot plants based on seeds, leaves, and flowers. Sugarcane, Mango, Guava, Wheat, Rice, Rose, Pea, Maize, and bamboo.



### HOMEWORK / FOLLOW UP

2 MINUTES

Collect different leaves of monocot and dicot plants from your surroundings, classify and paste them in your notebooks.

# CLASSIFICATION AND CHARACTERISTICS OF ANIMALS



## STUDENT LEARNING OUTCOMES

- Differentiate between vertebrates and invertebrates based on their characteristics

## INFORMATION FOR TEACHERS

- Follow the given instructions before starting the lesson.
1. Read the text of the topic fully from the textbook and other available resources for developing a holistic picture.
  2. Keep in view the safety measures while students perform activities in the group.
  3. Plan and arrange the material needed for activities.
  4. Know the explanation of the contents.
  5. Use any of the suitable method for teaching the topic such as activity-based methods lecture cum discussion, demonstration, and project methods.
  6. Identify keywords and prepare their proper explanation on chart to be displayed in the class

**Keywords** Vertebrates and invertebrates, skeleton, bones, segmented and backbone.

**Skills** Observation and classification skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Writing board, marker, chalks, charts pictures of some common animals (vertebrates and invertebrates), G S textbook grade-5.



## INTRODUCTION

5 MINUTES

1. To create an environment favorable for teaching, ask students some questions e.g.
  - ◇ What are the names of some common animals that you mostly see in your surrounding? (Cat, dog, buffaloes, horse, butterfly pigeon, etc.)
  - ◇ What is your favorite animal?
  - ◇ What is backbone?
  - ◇ Do you have a backbone?
  - ◇ What is a skeleton?
2. Now introduce the topic as "Classification and Characteristics of Animals".



## DEVELOPMENT

20 MINUTES

- Start the lesson by reviewing the classification and characteristics of animals.

**Activity 1:**

- With the help of charts having pictures of some common animals, ask some questions to differentiate between vertebrates and invertebrates:
  1. What do you see on the chart?
  2. What do you think, do all animals have the same characteristics?
  3. Is there a difference between different animals on the chart?
  4. What are the characteristics of these animals?

**Activity 2:**

Refer to activity 1.5 of the GS textbook on page 7, for further explanation and identification of vertebrates and invertebrates.

Summarize the activity by mentioning characteristics and differences between vertebrates and invertebrates?

**Vertebrates:**

1. Vertebrates have an internal skeleton made of bone,
2. The body is divided into three main parts i.e., head, abdomen, and tail.
3. The brain is present within the skull.
4. They can hear, see, smell, taste, and feel.
5. Blood circulates in their body in blood vessels.
6. Skins of vertebrates are covered with scales or feathers or hairs.

**Invertebrates:**

1. Do not have backbone inside the body.
2. The body structure of invertebrates is of various types
3. Some are flat, round, and are segmented.
4. The body parts of invertebrates are different in different groups

**Guided Practice:****Activity 3:**

1. Make pairs of the students and provide chart papers
2. Ask them to draw a picture of one vertebrate and one invertebrate on the chart.
3. Now hang these charts on the board.
4. Ask the students one by one to write the characteristics of each animal on the chart.  
(In this way main characteristics of the vertebrates and invertebrates will be revised.)

Vertebrate	Characteristics 1_----- 2_----- 3_-----
Invertebrate	Characteristics 1_----- 2_----- 3_-----

## Recapitulation:

- To check the comprehension of the students ask few questions like:
  - ◇ What are the two main groups of animals?
  - ◇ What is backbone?
  - ◇ How animals are different from one another?



## CONCLUSION / SUM UP

3 MINUTES

1. Conclude the lesson, ask few questions like:
  - ◇ What is a vertebrate?
  - ◇ What is an invertebrate?
  - ◇ Mention any two characteristics of vertebrates' animals.
  - ◇ Mention any two characteristics of invertebrates' animals.
  - ◇ What do you think that human beings are vertebrates or invertebrates?
2. Sum up the lesson by revising the main points of the topic.



## ASSESSMENT

5 MINUTES

- Show students a picture of lizard, goat, fish, butterfly, mosquito, and cockroach and ask students to place these pictures of animals in the columns of vertebrates and invertebrates.

Vertebrates	Invertebrates



## HOMEWORK / FOLLOW UP

2 MINUTES

- Draw the following table on the board and ask students to copy it in the notebooks and complete it from home.

S No.	Characteristics	Vertebrates	Invertebrates
1	Rabbit		
2	Duck		
3	Crab		
4	Cat		
5	Cow		

# CLASSIFICATION OF VERTEBRATES



## STUDENT LEARNING OUTCOMES

- Classify vertebrates into fish, amphibians, reptiles, birds and mammals on the basis of their characteristics.

## INFORMATION FOR TEACHERS

- Follow the given instructions before starting the lesson.
  - Read the text and topic fully in the textbook.
  - Keep in view the safety measures while students perform activities in the group.
  - Plan and arrange the material needed for activities.
  - Know the explanation of the contents.
  - Use the suitable method for teaching the topic such as activity method, lecture cum discussion, demonstration and project method.
  - Identify the keywords to be used in this lesson and display them in the classroom.

### Keywords

Amphibians, reptile, fish, birds, mammals, gills, fish, respiration, creeping, beak, cold and warm-blooded animals

### Skills

Observation and classification skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Writing boards, marker, chalks, duster, charts, pictures of animals, G.S textbook grade-5



## INTRODUCTION

10 MINUTES

- To make the environment conducive for the teaching and learning process and to develop the interest, ask a few questions:
  - What are the main groups of animals, mention their names?
  - What are vertebrates and invertebrates?
  - What are the characteristics of vertebrates?
  - Name some common vertebrates and invertebrates.
  - Do you think that on basis of their characteristics, vertebrates can be further classified?
  - Why do we need to classify organisms?
- Now introduce the topic that today our lesson is "Classification of Vertebrates".

**Activity 1:**

1. Divide the class into five groups and give them a picture of one vertebrate e.g., fish, frog, snake, sparrow and horse.
2. Now ask students to observe the picture given to each group and point out their major characteristics and make a table on the board and record responses and guide.
3. Make corrections accordingly if the responses are not appropriate.

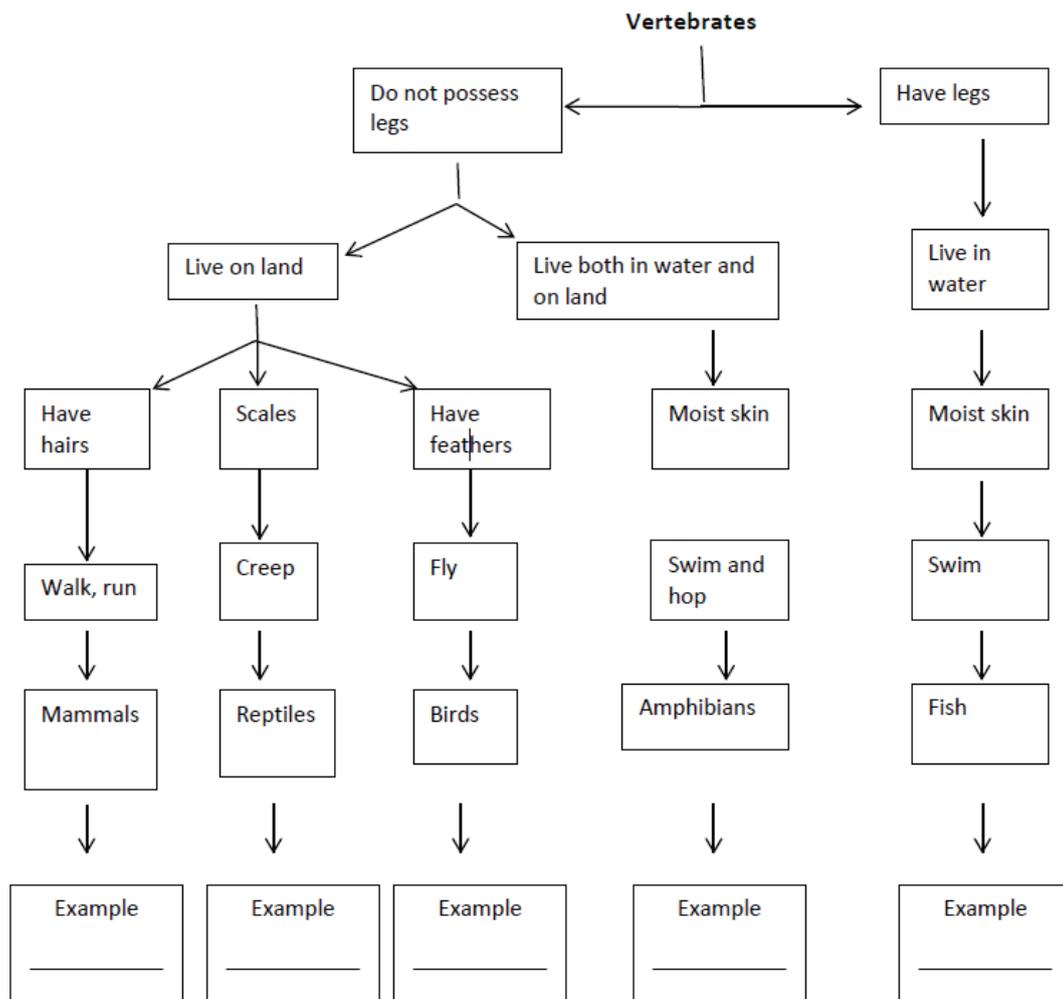
<b>Vertebrates</b>	<b>Legs</b>	<b>Habitat (land/water)</b>	<b>Skin</b>	<b>Movement</b>
Fish	No	Water	Moist	Swim
Frog	Yes	Land and water	Moist	Swim and hop
Lizard	Yes	Land	Scales	Creep
Sparrow	Yes	Land	Feather	Fly
Horse	Yes	Land	Hair	Walk/Run

**Guided practice:****Activity 2:**

1. Based on activity 1, divide the class into five groups. Assign the characteristics of different groups of vertebrates to each group.
2. Assign one group of vertebrates to each group.
3. Ask one group member to present it in the class.
4. The teacher will help the student during the presentation of the group.

**Activity 3:**

1. Explain the classification by making the following key points (Flow diagram given below) on the writing board.
2. Give the students to complete it
3. Assist the students to complete the table.



### Recapitulation:

- For checking the understanding of the students, ask few questions:
  1. What is the difference between frog and toad (ref: points to ponder page # 8 General Science textbook Grade - 5)?
  2. What are the main characteristics of vertebrates?
  3. Why could amphibians not flourish in the whole world?



### CONCLUSION / SUM UP

3 MINUTES

- To conclude the day's lesson, ask questions to check the students learning and discuss the main points of vertebrates. In the end, ask the following questions.
  - ◇ Name five groups of vertebrates?
  - ◇ What are amphibians?
  - ◇ What are reptiles?
  - ◇ What do you think the body temperature of mammals does not depend on the environment?
  - ◇ Name the vertebrate which changes body temperature with the environment.



### ASSESSMENT

5 MINUTES

- Exercise Q No. 1, 2, (ii, iii, iv) to be done in the class under proper guidance, write the correct

answer on the writing board.



## HOMEWORK / FOLLOW UP

2 MINUTES

- Ask to collect pictures of five different vertebrates belongs to different groups of animals and paste them in your notebooks, and record observations in notebooks like

Name of animal \_\_\_\_\_

Group of vertebrates \_\_\_\_\_

Three characteristics\_\_\_\_\_

# CLASSIFICATION OF INVERTEBRATES



## STUDENT LEARNING OUTCOMES

- Classify invertebrates into some major groups (sponges, worms, insects, molluscs and echinoderms) on the basis of their characteristics.

## INFORMATION FOR TEACHERS

Follow the given instructions before starting the lesson;

- Read the topic from the General Science textbook.
- Ensure the safety measures while students perform activities in the group.
- Plan and arrange the materials needed for activities.
- Know the explanation of the contents according to the level of the students.
- Use the suitable method for teaching the topic such as activity-based methods, lecture cum discussion, demonstration project method, etc.
- Identify keywords in the lesson and display them in the classroom.

### Keywords

Invertebrates, sponges, worms, insects, molluscs, echinoderms, pores, segmented, cylindrical and exoskeleton.

### Skills

Observation and classification skills to be emphasized during the lesson



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Writing boards, markers, charts, Flashcards with animals' pictures, glue, Paper pens, etc.
- General Science textbook Grade-5



## INTRODUCTION

5 MINUTES

Ask some questions to build the interest of students on the topic like:

- Mention the names of some common animals, you see in your daily life.
- Do you think that all animals are of the same size?
- Name the insects you see at home/school?
- What are invertebrates?
- Name some invertebrates.
- What are your observations about the structure of invertebrates?
- What is the purpose of classifying invertebrates?

After discussing these questions, the topic will be announced as **“Classification of Invertebrates”**.

**Activity 1:**

1. Divide the class into two groups.
2. Give group-1 cards having pictures of sponges, worms, insects, mollusks, and echinoderms.
3. Now the group-1 will show cards to group-2, and group-2 will describe their characteristics. After discussing all major groups of invertebrates, the observations will be recorded on the writing board as;

S No	Name of vertebrates	Characteristics
1.	Sponges	-----
2	Worms	-----
3	Insects	-----
4	Echinoderms	-----
5	Molluscs	-----

Give some more information about the structure and mode of life which will help to clarify the topic further.

**Guided Practice:**

Paste the chart on the writing board having some pictures of invertebrates and record the responses. Facilitate students in getting their responses.

S.No	Invertebrates	Pictures	Characteristics
1.	Sponges		A simple form of invertebrate lives in water, take food from the water.
2	Worms		Soft body, no legs, segmented, round, cylindrical body shape, e.g., flatworm and roundworm
3	Insects		Jointed legs, body segmented, body divided into three parts i.e., head, thorax and abdomen number of legs six or three pairs having exoskeleton e.g., wasp, cockroach etc.
4	Molluscs		Soft body, live in pond, lake, ocean and land, move freely or attached to anything e.g., snail, clyster, etc.
5	Echinoderms		Found in oceans, no head, disc, or star-shaped, the body has spiny coverings

### Recapitulation:

- To check the understanding of students, ask few questions:
  1. What are invertebrates?
  2. What are the characteristics of sponges?
  3. What is an exoskeleton?



### CONCLUSION / SUM UP

3 MINUTES

- Ask following questions to conclude and summarize the lesson.
  1. What are the main groups of invertebrates?
  2. What is the name of the group of starfish?
  3. What are the characteristics of molluscs?



### ASSESSMENT

5 MINUTES

- Exercise Q No 2 (iii) of GS textbook grade-5 on page # 17 to be performed in the class.



### HOMEWORK / FOLLOW UP

2 MINUTES

- Tell students to make a chart of the following invertebrates and write their characteristics in their notebooks.
  - ◇ Earthworm
  - ◇ Honeybee
  - ◇ Octopus
  - ◇ Brittle star
  - ◇ Sponges

# BIO-DIVERSITY



## STUDENT LEARNING OUTCOMES

1. Understand the concept of extinction and endangered species and the role of human actions in the loss of biodiversity.
2. Analyze some of the factors caused by human which are affecting biodiversity
3. Suggest and write some measures for the conservation of endangered species.

## INFORMATION FOR TEACHERS

- Follow the given instructions before starting the lesson.
1. Read the topic in the textbook and in other additional resource material available for concept clarity.
  2. Keep in view the safety measures while students perform activities in the group.
  3. Plan and arrange the material needed for activities.
  4. Know the default explanation of the contents according to the level of the students
  5. Use the suitable method for teaching the topic such as activity-based methods lecture cum discussion, demonstration and project methods.
  6. Identify keywords and provide sufficient explanation and use it frequently during the lesson.

### Keywords

**Biodiversity:** The number of kinds of living things present at a particular place.

**Extinct Species:** The types of plants and animals no longer found in this world.

**Endangered:** many organisms that are very likely to become extinct in near future are called endangered species.

### Skills

Observation and inferring skills to be emphasized during the lesson.

Take examples of those animals and plants, which are present in our surroundings and also mention those organisms which are rare or extinct, so that sufficient information is conveyed about biodiversity.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Writing boards, markers, charts, old newspapers, magazine cards with pictures of animals, scissors, and glue.



**INTRODUCTION**

**7 MINUTES**

1. Before starting the lesson create a learning environment by asking few questions like,
  - ◇ Name some plants and animals.
  - ◇ Which animal do you like the most?

- ◇ What is your favorite plant?
  - ◇ Name one big animal?
  - ◇ What are the names of some domestic animals?
  - ◇ What are the names of animals that are extinct now?
2. Introduce the term biodiversity and ask students about their understanding of the term from previous learning in grade 4.
  3. Biodiversity is a term used to describe the enormous variety of life on Earth. It can be used more specifically to refer to all of the species in one region or ecosystem.
  4. Show some pictures on a chart to conduct activity 1.7 on page 14 of the textbook, to describe some important points of biodiversity.
  5. After preliminary discussion, announce the topic as, **“Bio-diversity”**.



## DEVELOPMENT

20 MINUTES

### Activity 1:

1. Divide the class into two groups.
2. Give a chart to Group 1 and give old newspaper/ magazine to group 2.
3. Ask group 2 to cut pictures of plants and animals,
4. Ask group 1 to paste these pictures on the charts.



5. To explain the chart, ask the following questions and note responses on the writing board:
  - ◇ What do you see on the chart? (Plants and animals)
  - ◇ Name some plants, and animals from the charts
  - ◇ Name one small and one big animal from the chart?
  - ◇ Name the animals from the chart which are extinct now.
  - ◇ Name some animals which are near to extinction.
  - ◇ Define biodiversity?
6. Sum up the activity with the help of responses of students to the above questions.

### Activity 2:

1. Make the following table on the writing board:

S.No.	Name of animal	Extinct / endangered	Name of plant	Extinct / endangered
1	Dinosaurs	_____	Pine trees	_____
2	Bengal tiger	_____	Juniper	_____
3	Panda	_____	Mangrove	_____
4	Snow leopard	_____		

5	Hawk	_____		
6	Markhor	_____		
7	Indus dolphin	_____		

- Ask students to record correct responses on the writing board and to draw the table in their notebooks.

### Recapitulation:

- Check the understanding of students by asking few questions
  - Define biodiversity
  - Why biodiversity is important?
  - Which animal/plant is endangered or extinct in the chart?
  - What can we do to protect biodiversity?
  - Why some animals/plants become extinct?
  - What are the factors that affect biodiversity? (Deforestation, excessive hunting)



### CONCLUSION / SUM UP

3 MINUTES

Conclude the lesson by addressing the following questions with the help of students.

What is biodiversity?

What kind of plants and animals make biodiversity?

Mention the extinct and endangered species in biodiversity?

What is our role to protect endangered and extinct species?

What is the importance of biodiversity for human beings?



### ASSESSMENT

5 MINUTES

- Exercise questions 4 parts (iii) and (iv) at the end of the chapter should be assigned in class. Students to exchange copies for checking answers in class, while teachers will write correct answers on the board



### HOMEWORK / FOLLOW UP

2 MINUTES

- Note down the names of plants and animals while going from school to home on your notebooks.
- Write your response about their extinct or endangered nature.

Name of animals/ plants	Endangered /extinct
-----	-----
-----	-----
-----	-----
-----	-----

**Month**

**2**

# MICROORGANISMS



## STUDENT LEARNING OUTCOMES

- Define and describe microorganisms.
- Identify the main groups of microorganisms and give examples for each.

## INFORMATION FOR TEACHERS

Follow the given instructions before the lesson

1. Read the topic in the textbook and in the available additional resource materials to develop the holistic picture of the chapter.
2. Ensure the safety measures while students perform activities in the group
3. Plan and arrange the materials needed for activities
4. Know the detailed explanation of the contents.
5. Use the suitable method for teaching the topic such as activity-based method, lecture cum demonstration, and project method.

**Keywords** Microscope, microorganisms, virus, bacteria, fungi.

**Skills** Observation, classifying, inferring, predicting are the skills to be emphasized.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Writing board, marker, chalks, duster, KP Textbook General Science, Grade – 5. Chart of different microorganisms, original microscope (if possible)



## INTRODUCTION

5 MINUTES

1. To create interest among the students, ask the following questions.
  - ◇ What is COVID – 19?
  - ◇ What are the symptoms of COVID – 19?
  - ◇ What causes COVID – 19?
2. Facilitate students while getting the responses to the above questions.
3. After creating curiosity in students about the current pandemic COVID-19, tell the students that today we will discuss microorganisms and recognize some common diseases caused by microorganisms of each group.

**Activity 1:**

1. Display the charts showing the pictures of microorganisms and microscope.
2. Let the students observe these charts.
3. Ask the students,  
What is this? (Pointing towards microscope on charts or actual apparatus)  
(Facilitate students in getting their responses)
4. After taking the responses from the students,  
Summarize the activity that, microorganisms are those organisms that cannot be seen through naked eyes and can only be seen through a microscope. Microorganisms are present everywhere in the surroundings.
5. Ask the following questions to revise the topic,
  - ◇ What is a microorganism?
  - ◇ What instrument is used to see microorganisms?

**Activity 2:**

1. Divide the whole class into three groups.
2. Assign them the main groups of Microorganisms to each group:

Group – A	Group – B	Group – C
<b>Virus</b>	<b>Bacteria</b>	<b>Fungi</b>

3. Ask each group to open their textbook of Grade- 5, for their assigned topics.
4. Discuss the assigned topic within the group.
5. Provide guidance and feedback to students in the groups.
6. Nominate a student from each group to share the main points of the topic with the rest of the class.
7. After the presentation of each group,
8. Ask students to write their main points in a notebook/ chart and paste it on the wall of the classroom.



- Now conclude the activity that “Microorganisms consist of three main groups i.e., virus, bacteria and fungi”.

**Virus:**

- ◇ Very tiny infectious particles
- ◇ The link between the living and nonliving organisms.
- ◇ Very harmful
- ◇ Cause diseases like COVID-19, polio, hepatitis, flu, etc.

**Bacteria:**

- ◇ Single-celled organisms.
- ◇ Found everywhere in the environment.
- ◇ They are beneficial as well as harmful.
- ◇ Cause diseases like tuberculosis, diarrhea, etc.

### **Fungi:**

- ◇ Simple organisms
- ◇ Neither like plants nor animals
- ◇ They decompose dead matter,
- ◇ Ringworm, athlete's feet are diseases caused by fungi.

**Example:** yeasts, penicillin



### **ASSESSMENT**

5 MINUTES

1. Ask the following questions from the students to check their understanding
  - ◇ For what purpose, is the microscope used?
  - ◇ Name two diseases caused by the virus.
  - ◇ Why is the virus a link between the living and nonliving organisms?



### **HOMEWORK / FOLLOW UP**

2 MINUTES

1. Give Q No. 1 of exercise on page # 30 of the textbook as homework.
2. Tell students to write the key points of virus, bacteria, and virus in their notebooks.

# ROLE OF MICROORGANISMS AS DECOMPOSERS



## STUDENT LEARNING OUTCOMES

Highlight the role of microorganisms in decomposition and discuss its harmful and beneficial effects.

## INFORMATION FOR TEACHERS

- Follow the given instructions:
  1. Read textbook and topics carefully.
  2. Keep in view the safety measures while students perform activities in the group
  3. Plan and arrange the materials needed for activities.
  4. Know the detailed explanation of the contents.
  5. Use the suitable method for teaching the topic such as activity-based method, lecture cum discussion, demonstration and project method.

**Keywords** Decomposers, biotic and abiotic, environment.

**Skills** Observing, classifying and inferring are the skills to be emphasized during the lesson.

**Method:** Activity-based method is used while delivering the topic.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Writing board, marker, chalks, duster and General Science Textbook Grade – 5.



**INTRODUCTION**

5 MINUTES

1. Check the previous knowledge of students and motivate them by asking the following questions.
  - ◇ What are the various viral diseases?
  - ◇ What are fungal diseases?
  - ◇ What are the harmful effects of microorganisms?
  - ◇ Do you know that microorganisms are beneficial?
2. Facilitate the students in getting their responses.



**DEVELOPMENT**

25 MINUTES

After the last question, announce the topic "Role of Microorganisms as Decomposers".

### Activity 1:

1. Divide the whole class into two groups.
2. Assign group-1 the topic, 'Useful effects of decomposition'.
3. Assign group-2 the topic, 'Harmful effects of decompositions'.
4. Ask students to open their textbook of grade 5 on page # 24.
5. Note key points of their assigned topic on their notebooks and charts.
6. Ask both the groups to present the key points of their assigned topics to the rest of the class.
7. Summarize the topic with the key points.



### CONCLUSION / SUM UP

3 MINUTES

- Sum up the topic that microorganisms act as decomposers.
- These decomposers by microorganisms are both beneficial and harmful.
- The harmful effect of microorganisms is damaging food and wood.
- Similarly, the beneficial effect of microorganisms is the conversion of dead bodies of living organisms into simple products.



### ASSESSMENT

5 MINUTES

- To judge the level of comprehension of students about the topic, ask the following questions.
  - ◇ What is the decomposition process?
  - ◇ How is the decomposition process beneficial?
  - ◇ List the disadvantages of the decomposition process



### HOMEWORK / FOLLOW UP

2 MINUTES

- Write the answer to Q3 and Q4 part (i) in your notebooks.

# DISEASES CAUSED BY MICROORGANISMS



## STUDENT LEARNING OUTCOMES

- Recognize some common diseases caused by microorganisms of each group.
- Suggest preventive measures to protect themselves from these infections.

## INFORMATION FOR TEACHERS

- Follow the given instructions.
  1. Read the topic fully in the textbook to develop a holistic picture of the chapter.
  2. Ensure the safety measures while students perform activities in the group.
  3. Plan and arrange the materials needed for activities.
  4. Know the detailed explanation of the contents.
  5. Use the suitable method for teaching the topic such as activity-based method, lecture cum discussion, demonstration and project method.

**Keywords** Infections, diseases, infection transmission, pathogens

**Skills** Observation, inferring and classifying are the skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Writing boards, marker, chalks, duster, KP Textbook General Science Grade – 5, a chart showing pictures of diseases and SOPs for COVID – 19.



## INTRODUCTION

5 MINUTES

1. To check the previous knowledge of students and create interest among students, ask the following questions.
  - ◇ What are microorganisms?
  - ◇ What are the main groups of microorganisms?
  - ◇ What are various diseases caused by microorganisms?
2. Facilitate students while getting responses from them.
3. After the third and last question, the topic will be announced that today we will discuss a diseases caused by microorganisms the spread of infectious diseases and preventing the infections.



## DEVELOPMENT

25 MINUTES

### Activity 1:

1. Display the pictures on the chart and paste them into the appropriate place of the classroom. Tell students to open their General Science textbook Grade 5 on page # 25 for pictures of diseases caused by microorganisms.
2. Ask students to list the diseases caused by viruses.
3. Ask questions about the diseases caused by bacteria.
4. Pointing towards the chart showing pictures of rust, smut, ringworm and athlete's foot, ask students that "What cause these diseases"?
5. To recapitulate the topic, ask students the following questions.
  - ◇ What are viral diseases?
  - ◇ Name some diseases which are caused by bacteria?

### Activity 2:

1. Ask questions from students that:
  - ◇ Why we wear a face mask?
  - ◇ What are SOPs?
2. Pointing towards the chart showing Standard Operating Procedures (SOPs) for COVID-19, tell the students that why are these SOPs important for us?  
(Facilitate students in their responses)

### Summary:

Now summarize the topic that,

1. Diseases caused by the virus are flu, hepatitis and COVID-19, etc.
2. Diseases caused by bacteria are cholera, typhoid, etc.
3. Diseases caused by fungi are ringworm, athlete's foot, etc.
4. There are preventive measures for protecting against infections.
  - ◇ Get vaccinated.
  - ◇ Wearing face mask.
  - ◇ Avoid handshake and physical touch.
  - ◇ Wash hands regularly.
  - ◇ Cover the wound immediately (in case of injury).



## ASSESSMENT

3 MINUTES

Ask/discuss with students the following Points/questions:

- ◇ List diseases caused by fungi.
- ◇ What are pathogens?
- ◇ Why we take preventive measures?



## HOMEWORK / FOLLOW UP

2 MINUTES

1. Students have to attempt Q2 of the exercise on page 30 of the General Science textbook in their notebooks.
2. Ask the students to write down preventive measures on a chart paper and display them on the wall of the classroom.

# SPREAD OF INFECTIOUS DISEASES AND TRANSMISSION TO HUMANS



## STUDENT LEARNING OUTCOMES

- Recognize that microorganisms get transmitted into humans and spread infectious diseases.

## INFORMATION FOR TEACHERS

- Follow the given instructions before starting the lesson.
  - Read the topic in the textbook and other additional resource material available for the holistic understanding of the chapter.

Keep in view the safety measures while students are performing activities in the group.

- Plan and arrange the material needed for activities.
- Know the detailed explanation of the contents.
- Use the suitable method for teaching the topic such as activity-based methods, lecture cum discussion, demonstration and project methods.

**Keywords** Hepatitis, pathogens, waterborne diseases.

**Skills** Observing, inferring and classification skills to be emphasized during the lesson among the students.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Writing board, marker, chalks, duster, G S textbook Grade – 5.



**INTRODUCTION**

5 MINUTES

- Before starting the lesson following questions may be asked from students to link them with the previous topic and increase their interest in the new topic.
  - What are the benefits of microorganisms?
  - List various diseases caused by microorganisms.
  - Can these diseases be spread from one human being to another?
  - Facilitate students in their responses.



**DEVELOPMENT**

20 MINUTES

- After the third question, announce the topic that today we will discuss the spread of infectious diseases and transmission to humans.

### Activity 1:

Perform activity 2.3 on page 26 of the General Science textbook grade – 5 to students.



#### CONCLUSION / SUM UP

3 MINUTES

1. Conclude the activity that diseases caused by microorganisms can be spread from one person to another person through the air, water, food, or through direct contact.
2. Draw the attention of the students to the spread and prevention of COVID-19 germs through social distancing.



#### ASSESSMENT

5 MINUTES

- Ask the students the following question to recapitulate the lesson:
  1. Identify the diseases that are transmitted through the air.
  2. What are waterborne diseases?
  3. List animal-borne diseases.
  4. What are the sources of transmission of flu and COVID-19?



#### HOMEWORK / FOLLOW UP

2 MINUTES

- Give students the home task to classify the diseases transmitted through air, water, animals and direct contact and write it down in your notebooks.

## LESSON

## 11

# USEFUL ROLE OF MICROORGANISMS IN EVERYDAY LIFE



## STUDENT LEARNING OUTCOMES

- Discuss and deduce advantages and disadvantages (any three) of microorganisms by using some daily life examples.

## INFORMATION FOR TEACHERS

- Follow the given instructions before starting the lesson.
  1. Read the topic fully in the textbook and in other additional resource material available.
  2. Keep in view the safety measures while students perform activities in the group.
  3. Plan and arrange the materials needed for activities.
  4. Know the detailed explanation of the contents according to the level of the students
  5. Use the suitable method for teaching the topic such as activity-based method, lecture cum discussion, demonstration and project method.

**Keywords** Yeast, yogurt, dough, medicines, toxic materials, sewerage, industrial wastes

**Skills** Observation, classification, inferring, are the skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Writing board, marker, chalks, duster, G S Textbook Grade – 5, Original specimen of yogurt and dough if possible.



## INTRODUCTION

5 MINUTES

- Before starting the lesson, motivate the students to study the new topic by asking the following questions for brainstorming.
  1. What are the useful effects of microorganisms?
  2. What are the harmful effects of microorganisms?
  3. How is yogurt formed?



## DEVELOPMENT

20 MINUTES

After the last questions inform the students that, today we will discuss the useful role of microorganisms in everyday life.

### Activity 1:

1. Show the students yogurt and ask them, how is it formed?  
(Facilitate students in their responses)
2. Now also perform activity 2.4 of G.S textbook grade –5 on page 27. (More time will be needed for this activity)
3. Ask the students to observe the difference in the size of the dough by using yeast and without using yeast in both the pots after one hour.



### CONCLUSION / SUM UP

3 MINUTES

- Conclude the lesson that microorganisms play a useful role in our daily life.
1. Yeast converts milk into yogurt
  2. Yeast also increases the size of the dough.
  3. Microorganisms (bacteria and fungi) convert the dead organic matter into simple substances
  4. Microorganisms (bacteria and fungi) are also used to synthesize medicines, which are used to kill or inhibit the growth of bacteria.



### ASSESSMENT

5 MINUTES

- To check the level of understanding of students, ask the following questions:
  - ◇ How do microorganisms clean the environment?
  - ◇ How is yogurt formed?
  - ◇ What is yeast?
  - ◇ What happened to dough when yeast is added to it?



### HOMEWORK / FOLLOW UP

2 MINUTES

- Give Q. No. 2 (iii) and iv of exercise at page 30 of G S textbook grade –5 to students as a homework assignment and for follow-up.

# FLOWER STRUCTURE OF A FLOWER



## STUDENT LEARNING OUTCOMES

- Examine and describe the structure of flower.

## INFORMATION FOR TEACHERS

- Follow the given instructions before starting the lesson
  - Read the textbook and topics carefully for developing a holistic picture.
  - Keep in view the safety measures while students are performing activities in the group.
  - Plan and arrange the materials needed for activities
  - Know the detailed explanation of the contents.
  - Use the following suitable method for the teaching of the topic.
    - Activity-based method
    - Lecture cum discussion,
    - Demonstration
    - Project method.

**Keywords** Stigma, style, ovary, petals, carpel, stamen, sepals, ovule, filament, anther.

**Skills** Observing, classification, and inferring are skills to be emphasized during the lesson in the students.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Writing board, marker, chalk, duster, textbook of General. Science. Grade-5, flower (original specimen) and charts showing parts of a flower.



## INTRODUCTION

5 MINUTES

- To create interest among the students and to judge their previous knowledge, ask the following questions.
  - What are the five major kingdoms of living organisms?
  - What are the major parts of a plant?
  - Which part of the plant is attractive?  
(Facilitate students in getting their response)



## DEVELOPMENT

20 MINUTES

After the third and last question, announce the topic as flower, Structure of a Flower.

### Activity:

1. Bring original specimens of the flower.
2. Separate its various parts with the help of tweezers.
3. Ask the students to open their General Science textbook pages 34 – 35.
4. Now pointing towards the different parts of the flower, ask students to name the parts of the flower while comparing with the picture given in the textbook.  
(Facilitate students in getting their responses)

### Activity 2

1. Discuss the functions of each part by showing the part and ask the students for their responses about the function of each part.
2. Develop the table of the function of each part on the writing board from the General Science textbook on page 35.



### CONCLUSION / SUM UP

3 MINUTES

- Conclude the lesson by revising the different parts of the flower and their functions.
1. The attractive part of the flower is the petals
  2. The male reproductive part of the flower is the stamen.
  3. Carpel is the female reproductive part of the flower.



### ASSESSMENT

5 MINUTES

- To judge the comprehension of the students about the topic, ask the following questions.
1. What is the function of sepals?
  2. Pollen grains are formed in which part of the flower?
  3. What is stamen?
  4. What is the function of petals?



### HOMEWORK / FOLLOW UP

2 MINUTES

- Give students question No. 2 (v) on page 46 of the General Science textbook Grade – 5.
- Draw and label the parts of a flower in your notebooks.
- Ask students to collect the specimens and perform the following project and bring them to class for presentation on the next day.
- Project work for students Q No 5 (I) Exercise at page 47 of G.S textbook.

# POLLINATION AND ITS TYPES



## STUDENT LEARNING OUTCOMES

- Define pollination and describe its types with examples.

## INFORMATION FOR TEACHERS

- Follow the given instructions before the lesson:
  - Read the topic in the textbook, also consult other additional resources available for concept clarity.
  - Keep in view the safety measures while students are performing activities in the group.
  - Plan and arrange the materials needed for activities
  - Know the detailed explanation of the contents.
  - Use the suitable method for teaching the topic such as activity-based methods lecture cum discussion, demonstration and project method, etc.

**Keywords** Pollination, self-pollination and cross-pollination

**Skills** Observing, classification, inferring are the skills to be emphasized in the students during the lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Writing board, marker, chalks, duster, General Science textbook Grade – 5, charts showing a picture of the self and cross-pollination.



## INTRODUCTION

5 MINUTES

- To create interest among the students and to link the current topic with the previous one ask the following questions
  - What is the attractive part of the plant?
  - What is the female reproductive part of the flower?
  - Which part of the flower is the male reproductive part?
  - What is pollination?



## DEVELOPMENT

25 MINUTES

- After the last question announce the topic, that today we will discuss “Pollination and its types.”

### Activity 1:

1. Divide the whole class into two groups i.e., group-1 and group-2
2. Assign group-A: self-pollination and to group B: cross-pollination
3. Ask students to open their textbook pages 35-36
4. Students to discuss their assigned topic with each other and write the key points on a chart paper also draw the assigned topic.
5. Invite one volunteer from each group to present their findings to the rest of the class.
6. Paste the group's work on the wall of the classroom.



### CONCLUSION / SUM UP

3 MINUTES

- Conclude the lesson that
  - ◇ Pollination is the transfer of pollen grains from the anther to the stigma of the flower.
  - ◇ There are two types of pollination: self-pollination and cross-pollination. In self-pollination, pollen grains are transferred to the stigma of the same flower. It occurs in pea, cotton, tomato, etc.
  - ◇ While in cross-pollination pollen grains are transferred from the flower of one plant to the stigma of another plant. Maize, papaya and rose are examples of cross-pollination.



### ASSESSMENT

5 MINUTES

- To judge the comprehension of the students about the topic ask the following questions
  - ◇ What is pollination?
  - ◇ What is cross-pollination?
  - ◇ What are the examples of self-pollination?



### HOMEWORK / FOLLOW UP

2 MINUTES

- Give students Exercise Q No. 2 (ii) of textbook on page 45, as a homework assignment.

**Month**

**3**

# TYPES OF REPRODUCTION IN PLANTS



## STUDENT LEARNING OUTCOMES

Define reproduction and differentiate between sexual and asexual reproduction in plants.

## INFORMATION FOR TEACHERS

- Follow the given instructions before starting the lesson
  1. Read textbook and topic carefully
  2. Keep in view the safety measures while students are performing activities in the group
  3. Plan and arrange the materials needed for activities
  4. Know the detailed explanation of the contents.
  5. Use the suitable method for teaching the topic such as activity-based method, lecture cum discussion, demonstration and project methods.

### Keywords

Reproduction, sexual, asexual, use keywords frequently during the class lesson to clarify them.

### Skills

Observing, classifying, inferring are the skills to be emphasized during the delivery of the lesson.



**DURATION / NO OF PERIODS: 70 MINUTES / 2 PERIODS**



## MATERIALS / RESOURCES REQUIRED

- Writing board, marker, chalks, duster, chart, G.S textbook Grade – 5 Charts showing the types of asexual and sexual reproduction.



## INTRODUCTION

5 MINUTES

- To create a learning environment for students, a brainstorming session will be conducted by asking the following questions
  - ◇ What is pollination?
  - ◇ What is cross-pollination?
  - ◇ List the characteristics that differentiate between living organisms and nonliving organisms?
  - ◇ What is reproduction?



## DEVELOPMENT

20 MINUTES

- After the last question announce the topic that today we will discuss “Types of Reproduction in plants”

### Activity 1:

1. Divide the whole class into three groups, groups A, B, C.
2. Assign group –A, layering, group – B, bulb and group – C, tuber.
3. Ask students to open their textbook on pages 37 –38, discuss and note the key points of the assigned topic from the textbook on a chart paper.
4. Now nominate one student from each group to present their group work to the rest of the class.
5. The teacher will summarize the key points.

### Activity 2:

1. Students practically perform activity 3.2 on page 37 of the textbook.
2. The teacher will facilitate and supervise the activity. Place the pot in the classroom for students to observe each day and water the plant.



### CONCLUSION / SUM UP

3 MINUTES

- Now conclude the lesson that:
  1. In asexual reproduction, only one plant will produce a new plant.
  2. Flowers do not take part in asexual reproduction.
  3. Roots, stems and leaves grow through asexual reproduction.
  4. **Layering:** Often some branches of shrubs become buried in the soil. It is called a layer. A layer produces new roots. When we cut and separate that part of the plant, it develops into a new plant.
  5. **Bulb:** When we cut the base with roots and bury it in the soil, it develops into a new plant e.g., onion, garlic
  6. **Tuber:** When the pieces of potato having eyes, are buried in the soil, new plants develop from them are called a tuber.
  7. In the end, tell students that in this period, we have learned about the reproduction of plants.



### ASSESSMENT

5 MINUTES

- To see the comprehension of the topic, ask the following question in class.
  1. What is tuber?
  2. What is layering?
  3. What is the process of bulb?



### HOMEWORK / FOLLOW UP

2 MINUTES

- Students have to consult the General Science textbook for writing the definitions of the following terms in their notebooks.
- Asexual reproduction, Sexual reproduction, layering, bulb, tube

# TYPES OF REPRODUCTION IN PLANTS



## INTRODUCTION

5 MINUTES

- Tell the students that in the previous period we have discussed the types of asexual reproduction i.e., bulb, tuber and layering. For recalling ask the following questions:
  1. What is the process of layering?
  2. What is the process of tuber?
  3. What is asexual reproduction?
  4. What is sexual reproduction?



## DEVELOPMENT

20 MINUTES

After the last question announce the topic that today, we will discuss “sexual reproduction”.

### Activity 1

1. Use a chart showing the different parts of the flower.
2. Ask the students to open their General Science textbooks on page 38
3. Pointing towards the chart, point out that sexual reproduction occurs in flowering plants.
4. In cross-pollination, the pollen grains reach stigma where it generates and forms a thin tube called pollen tube.
5. Male gametes are formed in the pollen tube and female gametes are formed in the ovule. The male and female gametes fuse to form a zygote.
6. The zygote develops into an embryo.
7. Ovule becomes seed and ovary ripen to form the fruit.

### Activity2

1. Ask the students to open page 46 of their textbooks to discuss and identify Q. 3 part (ii).
2. Encourage the students to give their reasons for the answer.

### Activity 3:

Help the students to investigate the following statement at G.S textbook page 46 of under the title Q. 4 Investigate.

**“If all the insects become extinct, what will be its effect on flowering plants?”.**

Students will write their answers in their notebooks.



## CONCLUSION / SUM UP

3 MINUTES

- To recapitulate the topic, ask the following questions
  1. How is a zygote formed?
  2. Where do the female gametes form?
  3. After recapitulating, conclude the day’s lesson on sexual reproduction by mentioning the key points.



## ASSESSMENT

5 MINUTES

**To see the comprehension of the students, ask the following questions**

- ◇ What is layering?
- ◇ What is sexual reproduction?
- ◇ Explain the process of the tuber.



## HOMEWORK / FOLLOW UP

2 MINUTES

- Draw and label the diagram of sexual reproduction in plants consult the figure given in the General Science textbook page 38.

# STRUCTURE OF SEED, GERMINATION OF SEED



## STUDENT LEARNING OUTCOMES

- Describe the structure of a seed and demonstrate its germination.

## INFORMATION FOR TEACHERS

- Follow the given instructions before starting the lesson
  - Read textbook and topics carefully
  - Keep in view the safety measures while students are performing activities in the group
  - Plan and arrange the material needed for activities
  - Know the detailed explanation of the contents.
  - Use the suitable method for the teaching of the topic.
    - Activity-based method
    - Lecture cum discussion,
    - Demonstration
    - Project method.

**Keywords** Cotyledon, testa, germination, radicle, plumule, root and shoot.

**Skills** Observing, classifying, inferring are the skills to be emphasized during the lesson



**DURATION / NO OF PERIODS: 70 MINUTES / 2 PERIODS**



**MATERIALS / RESOURCES REQUIRED**

- Writing board, marker, chalks, duster, G.S textbook, Grade – 5, charts showing an internal structure of seed, plastic cups, sawdust, sand.



**INTRODUCTION**

5 MINUTES

- To link the current topic with the previous one and prepare students for the topic, ask the following questions:
  - What is the attractive part of the plant?
  - What function do flowers perform?
  - Have you seen any type of seeds?



**DEVELOPMENT**

20 MINUTES

After the third question announce the topic, that today we will discuss “structure of seed, Germination of seed”.

### Activity 1:

1. Perform activity 3.3 about the internal structure of seed present in General Science textbook page 39.
2. The teacher will explain the different parts and functions of the seed.

### Recapitulation:

- To recap the main point of activity, ask the following questions:
  1. What is the outer covering of the seed?
  2. Which part of the seed is responsible for the storage of food?
  3. Which part of the seed develops into a shoot?



### CONCLUSION / SUM UP

5 MINUTES

- Now conclude the lesson:
  1. The outer covering of the seed is called seed coat/testa.
  2. The embryo consists of cotyledon, which stores food.
  3. The axis of the embryo is between the two cotyledons.
  4. The end of the axis towards the pointed end of the seed is called a radicle.
  5. When the seed germinates radicle forms the root.
  6. The other end of the axis is called plumule. It gives rise to the shoot.
  7. The germination of the seed is a process in which a seedling comes out of the embryo.
  8. Seed absorbs water during germination and seed coat bursts.
  9. Cotyledon provides food to plumule and radicle.
  10. In the end, tell students that in this period, we have learned about the structure of a seed.



### ASSESSMENT

5 MINUTES

- To judge the understanding of students asks the following questions:
  1. What is the function of cotyledon?
  2. From which part of seed, shoot is developed.
  3. What is germination?
  4. What is the role of testa?

# STRUCTURE OF SEED, GERMINATION OF SEED



## INTRODUCTION

5 MINUTES

1. Recall with students that in the last period they have learned about the structure of the seed and today we will discuss the germination of seeds.
2. After explaining the parts of the seed, the teacher will summarize the structure of the seed. Tell students that in period 2 we will discuss "Germination of seed".
3. List down the process of germination on the board while explaining each step.
4. It is a process when the seedling comes out of the embryo.
5. Refer to page # 39 topic **Germination of Seed** and ask the students to read out the germination of seed for their understanding.
6. Students will now understand the process of germination and will be ready for doing the practical activity.



## DEVELOPMENT

25 MINUTES

### Activity: (Germination of seed)

1. Divide the class into groups for the following practical exercise.
2. Activity 3.4 General Science textbook Grade-5 on page 40.
3. Students will follow and take observations for two weeks.



## CONCLUSION / SUM UP

3 MINUTES

- Sum up the topic by revising the key steps of germination as seen in the practical.



## HOMEWORK / FOLLOW UP

2 MINUTES

- Ask the students to fill the observation sheet of activity 3.4 regarding seed germination on page 40 of the General Science textbook Grade-5.

# STRUCTURE OF MAIZE SEED, STRUCTURE OF GRAM SEED



## STUDENT LEARNING OUTCOMES

Compare and contrast the structure and function of a gram and maize seed.

## INFORMATION FOR TEACHERS

- Follow the given instructions before the lesson
  1. Read textbook and topic for developing a holistic picture.
  2. Ensure the safety measures while students are performing activities in the group.
  3. Plan and arrange the material needed for activities.
  4. Know the detailed explanation of the contents.
  5. Use the suitable method for teaching.
    - ◇ Activity-based method
    - ◇ Lecture cum discussion,
    - ◇ Demonstration
    - ◇ Project method

**Keywords** Cotyledon, embryo, seed coat (testa).

**Skills** Observing, classifying and inferring are the key skills to be emphasized in the students during the lesson.



**DURATION / NO OF PERIODS: 70 MINUTES / 2 PERIODS**



## MATERIALS / RESOURCES REQUIRED

- Writing board, marker, chalks, duster, General Science textbook, Grade – 5, charts showing the pictures of the internal structure of gram and maize seed and some boiled gram and maize seeds for practical work.



## INTRODUCTION

5 MINUTES

- To create the environment for learning and create interest in the students, ask the following questions:
  1. What are the various parts of plants?
  2. What are the internal parts of a seed?
  3. What is cotyledon?
  4. How many types of seeds are there based on cotyledons?



## DEVELOPMENT

20 MINUTES

- After the last question announce the topic, that today we will discuss the **structure of maize seed structure of gram seed.**

### Activity 1:

1. Draw the structure of the maize seed on the writing board and discuss the **external** structure of the seed.
2. Students will be divided into groups and given some maize seeds to carry out activity 3.5 of the General Science textbook on page 41.
3. The students will write their observations in their notebooks.
4. All groups will now give their observations in turn (differences if any will be cleared by the teacher).

### Activity 2:

1. Draw the longitudinal section of the maize seed to show the **internal** structure of the seed.
2. Students will be divided into groups and give some maize boiled seeds to carry out the activity
3. Students to refer to activity 3.6 of General Science textbook grade – 5–page 41.
4. They will observe the different parts and draw a labeled diagram in their notebooks.
5. Check the notebooks after completion of the activity.



## CONCLUSION / SUM UP

3 MINUTES

1. Conclude the lesson by giving key points of the structure of maize seed.
2. In the end, tell students that in this period, we have learned about the structure of a gram and maize seed.



## ASSESSMENT

5 MINUTES

- To judge the understanding of students about the topic, ask the following questions:
  1. What are the total numbers of cotyledon in maize seed?
  2. What is the shape of maize seed?
  3. What is the position of endosperm in maize seed?



## HOMEWORK / FOLLOW UP

2 MINUTES

- For homework, students will write the parts of the maize seed and their functions, they may refer to General Science textbook page 41 for the answer.

# STRUCTURE OF MAIZE SEED, STRUCTURE OF GRAM SEED



## INTRODUCTION

5 MINUTES

- Recall with students that in the last period they have learned about the structure of the seed and today we will discuss the function of a gram and maize seed.



## DEVELOPMENT

20 MINUTES

- Introduce the gram seed to the class its structure and functions by drawing its structure on the board.
- Give some seeds to students to observe and answer as you develop the drawing.

### Activity 1:

- Ask the students to refer to activity 3.7 in the book on page 42.
- Students will be divided into groups to carry out this activity to observe the **external** structure of gram seed.
- They will observe the gram seed and note their observations in the notebook.
- Students will share their observations and the teacher will guide them for the right answers.

### Activity 2:

- Divide the students into groups. The students in groups will now carry out activity 3.8 General Science textbook on page 42.
- They will now observe the **internal** structure of the Gram seed and note their observations.
- Each group will discuss their observations with the class, teacher to confirm the answers.

### Activity 3:

- Draw the attention of the students to compare the two seeds maize and gram. Refer to page 42 of the General Science textbook.
- Students will draw a table in their notebooks to write the differences from their observations made earlier.



## CONCLUSION / SUM UP

3 MINUTES

- The shape of maize seed is oval and flat, while that of gram's seed conical, pear-shaped and light brown in color.
- In maize seed, there is one cotyledon and in gram seed, there are two cotyledons.
- In gram, seed endosperm is absent while in maize seed endosperm is present



## ASSESSMENT

5 MINUTES

- A few questions will be asked for assessing the comprehension and understanding of the students.
- The endosperm is present in which seed?

2. What is the color of gram seed?
3. Which part of the plant is developed from the radicle?



## **HOMEWORK / FOLLOW UP**

**2 MINUTES**

- Ask students to write the comparison of Gram and Maize seeds in their notebooks.

# CONDITIONS NECESSARY FOR SEED GERMINATION



## STUDENT LEARNING OUTCOMES

- Illustrate the conditions necessary for seed germination

## INFORMATION FOR TEACHERS

- Follow the given instructions before starting the lesson
  - Read textbook and topic fully for developing a holistic picture.
  - Keep in view the safety measures while students are performing activities in the group
  - Plan and arrange the materials needed for activities.
  - Know the detailed explanation of the contents.
  - Use the following suitable methods for teaching the topic.
    - Activity-based method
    - Lecture cum discussion,
    - Demonstration
    - Project method

**Keywords** Germination, condition (air, water, proper temperature)

**Skills** Observing, classifying and inferring are the key skills to be emphasized during the lesson



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Writing boards, marker, chalks, duster, GS textbook Grade-5



**INTRODUCTION**

5 MINUTES

- To motivate students and create their interest in the topics, ask the following questions:
  - What are the internal parts of the seed?
  - What is the function of seed coat or testa?
  - What is germination?
  - What are the conditions necessary for seed germination?



**DEVELOPMENT**

20 MINUTES

- After the fourth and last questions announce the topic, that today we will discuss "Conditions Necessary for Germination".

2. This will be a practical class; Students will observe and infer the conditions required for germination.

### Activity 1:

1. Demonstrate activity 3.9 of the General Science textbook for grade – 5 on page 43.
2. Students will note their observations in the notebook.
3. The teacher will save the test tubes for students to observe each day.



### CONCLUSION / SUM UP

3 MINUTES

- The teacher will conclude the activity that all seeds need water, oxygen (air) and proper temperature for their germination.



### ASSESSMENT

5 MINUTES

- Discuss the last four key points from the end of the chapter on page 44 to check the understanding of the students.



### HOMEWORK / FOLLOW UP

2 MINUTES

- Fill the observation sheet of activity 3.9 of General Science textbook grade-5 on page # 43.

# ENVIRONMENTAL POLLUTION AND ITS TYPES



## STUDENT LEARNING OUTCOMES

- Define pollution and its types

## INFORMATION FOR TEACHERS

- Follow the given instructions before teaching the lesson.
  - Read the textbook and topics carefully for developing a holistic picture.
  - Keep in view the safety measures while students are performing activities in the group.
  - Plan and arrange the materials needed for activities.
  - Know the detailed explanation of the contents.
  - Use the following suitable methods for the teaching of the topic.
    - Activity-based method
    - Lecture cum discussion
    - Demonstration
    - Project method.



## DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD



## MATERIALS / RESOURCES REQUIRED

- Charts, some samples of polluted water and polluted soil, writing board, duster, marker



## INTRODUCTION

5 MINUTES

- To motivate the students for learning, share some practical experiences about pollution by asking the following questions:
  - What happens to the eyes when you are sitting in an area where smoky air exists?
  - Why do we filter or boil water before drinking it? (To clean it from dirt and germs)
  - Why do we use a mask? (To prevent dust and germs from inhalation)
- After discussing these questions, students will get some ideas about pollution and will be ready to learn some more information about environmental pollution and its types.



## DEVELOPMENT

20 MINUTES

### Opening Activity 1

- Start the lesson by reviewing the term pollution. Conduct activity 4.2 to start the topic on pollution.
- Discuss the causes of pollution in Pakistan by sharing 'Point To Ponder' on page 49 of the

General Science textbook.

3. Ask students to think and identify the most dangerous environmental pollution in Pakistan.

### Activity 2:

- Divide the class into three groups and ask them to perform activity 4.1 in the textbook on page 49.
  - ◇ Light a small candle. Predict, what type of pollution is being produced by the burning of the candle?
  - ◇ Hold a glass over the flame of the candle for a while. Have you seen any change in the surface of the glass?
  - ◇ You will see the soot over the glass surface. Soot is an example of air pollution.



### Recapitulation (formative):

- After the activity, ask the students:
  1. What happened to the glass while holding it over a burning candle?
  2. Where do the gas particles move when released from vehicles?
  3. Do the gas particles from flames and vehicles make our air dirty?

### Activity 3

1. Divide the class into three groups.
2. Give them the names like:
  - ◇ Group A - Air pollution
  - ◇ Group B - Water pollution
  - ◇ Group C - Land pollution (also called solid waste pollution)
3. Ask them to list down the things responsible for these types of pollution. Consult General Science textbook on pages 49-50.



### CONCLUSION / SUM UP

3 MINUTES

- Before concluding the lesson check the students learning by asking these questions:
  1. What is pollution?
  2. Name the different types of pollution
  3. What type of pollution do you face when smoke releases into the air?



### ASSESSMENT

5 MINUTES

- Ask the following questions from the students
  1. What is an environment?
  2. What are the living components of an environment?
  3. What is land pollution?



### HOMEWORK / FOLLOW UP

2 MINUTES

- Make three columns A, B and C for air pollution, water pollution and land pollution and identify five items/things responsible for these types of pollution.

# CAUSES OF POLLUTION



## STUDENT LEARNING OUTCOMES

- Explain the main causes of water, air and land pollution.

## INFORMATION FOR TEACHERS

- Follow the given instructions before starting the lesson.
  1. Read textbook and topic carefully for developing a holistic picture.
  2. Keep in view the safety measures while students are performing activities in the group.
  3. Plan and arrange the materials needed for activities
  4. Know the detailed explanation of the contents.
  5. Use the following suitable method for the teaching of the topic.
    - ◇ Activity-based method
    - ◇ Lecture cum discussion
    - ◇ Demonstration
    - ◇ Project method.

### Keywords

Pollution, pollutants, harmful, sewage water, human organic wastes, fertilizers, garbage, chemical substances.

### Skills

Identification, observation, classification



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Charts, some samples of polluted water and polluted soil, writing board, duster and marker.



**INTRODUCTION**

**5 MINUTES**

1. Before starting the lesson, the teacher will ask the following question from students to motivate them towards learning the day's topic.
  - ◇ Would any one of you like to drink dirty water?
  - ◇ Why the water is dirty? (Due to some contamination)
  - ◇ How can you prevent yourself from air pollution? (By wearing a mask)
2. After discussing the above questions students will be ready to know more about the causes of pollution.



## DEVELOPMENT

20 MINUTES

1. Tell the students that our environment is entirely balanced.
2. Harmful agents which disturb the environment by causing an imbalance in water, air and land are called pollutants and the whole process is known as pollution.
3. Refer to activity 4.2 on page 49 of the General Science textbook to remind the students about the causes of pollution.

### Activity 1

1. To know about the causes of pollution teacher will take samples of dirty clay, dirty water, and gas in balloons.
2. Ask the students about the nature of the above-polluted samples and will ask them to read the three causes of pollution given on pages 49 and 50 of the General Science textbook.

### Activity 2

1. Explain the causes of pollution, smokes due to burning of fuels, wood, vehicles, and factories are the main cause of air pollution.
2. The sewerage water, wastes of factories and oil leakages, from oil carriages and supply make water polluted while garbage of houses in cities, insecticides and fertilizer in rural areas are the main cause of land pollution.
3. Refer the students to the General Science textbook on page 50 and ask them to write two points on each picture and give a name to the type of pollution.



**Air pollution**



**Water pollution**



**Land pollution**



## CONCLUSION / SUM UP

3 MINUTES

- To check the students learning ask some questions like,
  1. What are the main causes of pollution?
  2. Why are polythene bags banned?
  3. How would we save our home environment from garbage, fertilizers, and wastes?



## ASSESSMENT

5 MINUTES

- Activity 4.3 on page 51 of the General Science textbook to be performed in the classroom.



## HOMEWORK / FOLLOW UP

2 MINUTES

1. Develop a chart or table in your notebook and mention all activities occurring in your surroundings.
2. Classify them as causes for air pollution, water pollution and land pollution.

**Month**

**4**

# EFFECTS OF POLLUTION ON LIFE



## STUDENT LEARNING OUTCOMES

- Explain the effects of water, air and land pollution (unclean or toxic water, smoke, smog, excess carbon dioxide or other gases, open garbage dumps, industrial water etc.) on the environment and life.

## INFORMATION FOR TEACHERS

- Follow the given instructions before the lesson
  1. Read textbook and topic carefully for developing a holistic picture.
  2. Keep in view the safety measures while students are performing activities in the group
  3. Plan and arrange the materials needed for activities.
  4. Know the detailed explanation of the contents.
  5. Use the suitable method for the teaching of the topic like,
    - ◇ Activity-based method
    - ◇ Lecture cum discussion
    - ◇ Demonstration
    - ◇ Project method

**Keywords** Pollution, germs, diseases, aquatic life and garbage.

**Skills** Identification, classification and observational skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Whiteboard, marker, duster, charts, samples of contaminated water and clay.



**INTRODUCTION**

**5 MINUTES**

- To make the environment conducive for teaching learning and to develop the interest of the students ask the following questions.
  1. Why does no one like to eat rotten food? (Fungi effected)
  2. Why we drink clean water? (For good health or it does not affect health)
  3. What are the causes of air pollution?



**Activity 1**

1. Collect various examples of polluted water, land (clay) and air. Why these things are contaminated and what will be their effects on living things.
2. Discuss and explain the effects of environmental pollution as given in the General Science textbook on pages 51-52.
3. Students to write two effects of each type of pollution on life. In this case, the teacher will facilitate them and will refer them to GS textbook pages 51 and 52.

**Guided practice:**

- Draw a two-column table for water pollution, and land pollution and their effects from the pictures (fig) given on page 52 of the General Science textbook.

**Activity 2:**

1. Ask students to observe the pictures of the contaminated samples of water and soil.
2. Gather small groups of students around your table, so that they can observe.

**Effects of pollution on aquatic life**



**Effects of acids rain**



**Disposing of garbage**



**Polluted rainwater**



3. Draw the following table on the writing board and note their comments:

<b>Water Pollution</b>	<b>Effects</b>	<b>Land Pollution</b>	<b>Effects</b>

4. Ask them to read it from the General Science textbook on pages 51 and 52

5. Sum up the activity by summarizing the effects of water and land pollution.

### Recapitulation:

- Ask few questions from students to check their learning.
1. Name the gases which combine to form smog?
  2. How water gets impurities from a polluted environment?
  3. Name the gases which are responsible for acid rain?



### CONCLUSION / SUM UP

3 MINUTES

Before concluding the lesson, the teacher will ask few questions

From which type of pollution diseases of throat, skin and eyes are caused?

Which type of water is dangerous for the life of aquatic animals?

Which type of fruits and vegetables are obtained from polluted land, are they healthy?

Which type of pollution can cause lung diseases and allergies?



### ASSESSMENT

5 MINUTES

- Look at page 52 of the General Science textbook and analyze the fig "Disposing of garbage's which types of pollution are caused from this disposing garbage?"



### HOMEWORK / FOLLOW UP

2 MINUTES

1. Write the name of some diseases which usually occur from polluted air and water?
2. Why are polythene bags (plastic bags) banned by the government?

# GREENHOUSE EFFECTS



## STUDENT LEARNING OUTCOMES

- Explain the effects of burning fossil fuels and releasing greenhouse gases in the air.

## INFORMATION FOR TEACHERS

- Follow the given instructions before the lesson
  1. Read textbook and topic carefully for developing a holistic picture.
  2. Keep in view the safety measures while students are performing activities in the group
  3. Plan and arrange the materials needed for activities.
  4. Know the detailed explanation of the contents according to the level of the students.
  5. Use the suitable method for teaching this topic like.
    - ◇ Activity-based method
    - ◇ Lecture cum discussion,
    - ◇ Demonstration
    - ◇ Project method

### Keywords

Greenhouse, fossil fuel, burning, carbon dioxide, Sulphur dioxide, global warming.

### Skills

Observation and classification skills to be emphasized



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Whiteboard, marker, duster, charts, etc.



**INTRODUCTION**

**5 MINUTES**

- Ask few questions
  1. What are fuels? (Burning material producing heat and gases)
  2. Which gas is usually released from the burning of fuels? (Carbon dioxide)
  3. What are greenhouse gases?



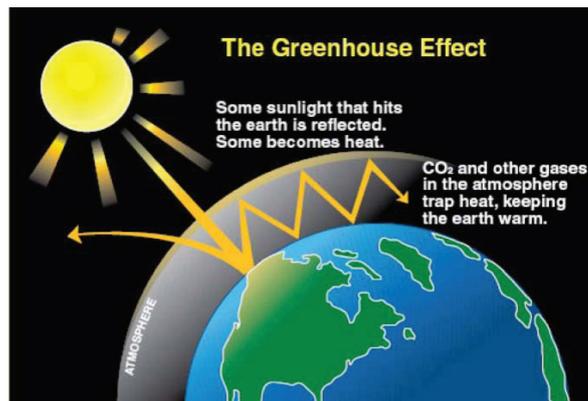
**DEVELOPMENT**

**20 MINUTES**

### Activity 1:

1. As an opening activity, review the term fossil fuels and their burning.
2. Ask the students which type of fuels they usually use in their homes.

- These are coal, gas, and wood.
- Tell them that carbon dioxide and other gases are released which increase the temperature of the environment and these gases are called greenhouse gases.



### Guided practice:

- Ask students to look at the two figures given on page 53 under the caption "Flood" and "Melting of Ice".
- This situation is produced from the effect of greenhouse gases, which increase the temperature of the environment, resulting in the melting of ice and mass floods.

**Melting of ice**



**Flood**



- Discuss '**Do You Know**' given on page 53 to explain fossil fuel.

### Activity 2:

- Facilitate the students to understand the greenhouse effect with the help of a poster, which would be developed by the students from the textbook.
- A greenhouse effect (fig) on page 52 will be referred to them.

### Recapitulation

- Students will be asked to check their learning.
  - What are greenhouse gases?
  - How is temperature of the environment increased?
  - How are heat radiations trapped by greenhouse gases?



### CONCLUSION / SUM UP

3 MINUTES

- Name the gases which are present in the atmosphere?
- Why is the climate of the world getting warm?

- ◇ What is meant by greenhouse effects?



### **ASSESSMENT**

5 MINUTES

- The class will be divided into four groups. Each group will be asked to suggest ways how to reduce emission of green house grass.



### **HOMEWORK / FOLLOW UP**

2 MINUTES

- Name and write a few fossil fuels, which are used and name as greenhouse gases.

# BIODEGRADABLE AND NON-BIODEGRADABLE MATERIALS



## STUDENT LEARNING OUTCOMES

- Differentiate between biodegradable and non-biodegradable materials.

## INFORMATION FOR TEACHERS

- Follow the given instructions before the lesson
  1. Read textbook and topic carefully for developing a holistic picture.
  2. Keep in view the safety measures while students are performing activities in the group.
  3. Plan and arrange the materials needed for activities.
  4. Know the detailed explanation of the contents.
  5. Use the suitable method for the teaching of the topic like.
    - ◇ Activity-based method
    - ◇ Lecture cum discussion,
    - ◇ Demonstration
    - ◇ Project method

**Keywords** Biodegradable, non-biodegradable decomposition, bacteria and fungi

**Skills** Identification, observation and classification skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Whiteboard, marker, duster, charts, samples of biodegradable and non-biodegradable materials



**INTRODUCTION**

5 MINUTES

- Start the lesson by asking questions about familiar sights in the environment
  1. Have you seen the food materials lying in one place for a long time?
  2. Have you seen plastics and stone materials lying in one place for a long time?
  3. What would you name these materials?



**DEVELOPMENT**

20 MINUTES

## Activity1

1. Look at pages 54 & 55 of the General Science textbook having the pictures of food

materials, plants and animals remaining and polythene bags and stones.

2. Can you imagine that these materials remain the same over time?
3. Those materials which change their shape and size and change into other components are called biodegradable materials like food materials, plants and animals' materials.
4. While those materials which do not change their shape and composition and do not change into other materials are called non-biodegradable materials.

### Guided practice:

1. Ask the students to separate the samples lying on the table into biodegradable and non-biodegradable.
2. Facilitate them during this activity.



**Fruits**



**Leather**



**Water**



**Bread**



**Wood**



**Foam plastic**

### Activity 2:

1. Show students a chart having the materials like wood, bread, water, leather, stone, sand, fruit and polythene bags.
2. Ask them to write separately biodegradable materials on one chart and non-biodegradable materials on another chart.

### Recapitulation:

1. What are biodegradable materials?
2. What are non-biodegradable materials?
3. Which one of them does not change its composition.



### CONCLUSION / SUM UP

3 MINUTES

- To conclude the lesson, ask a few questions.
  - ◇ How biodegradable materials are different from non-biodegradable materials?
  - ◇ Why biodegradable materials are not seen at their lying spots over time?
  - ◇ How non-biodegradable materials are a threat to land pollution?

**ASSESSMENT**

5 MINUTES

- Ask the students to answer Q. 4 Investigate on page 57 of the General Science textbook.

**HOMEWORK / FOLLOW UP**

2 MINUTES

- Activity 4.5 on page 54 of the General Science textbook to be done by each student at home and will bring after one week to the classroom for observation.

# WAYS TO REDUCE NON-BIODEGRADABLE THINGS



## STUDENT LEARNING OUTCOMES

- Explain the impact of non-biodegradable materials on the environment
- Investigate possibilities and suggest ways to reduce non-biodegradable materials.

## INFORMATION FOR TEACHERS

- Follow the given instructions before the lesson
  1. Read textbook and topic carefully for developing a holistic picture.
  2. Keep in view the safety measures while students are performing activities in the group
  3. Plan and arrange the materials needed for activities
  4. Know the detailed explanation of the contents according to the level of the students.
  5. Use suitable methods for teaching the topic like,
    - ◇ Activity-based method
    - ◇ Lecture cum discussion,
    - ◇ Demonstration
    - ◇ Project method.

### Keywords

Non-biodegradable, decomposition, pollution, burning, recycle, refuse, reuse, and reduce.

### Skills

Observation, classification, and identification skills to be emphasized during the lesson



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Whiteboard, marker, duster, charts, some samples of non-biodegradable things



**INTRODUCTION**

5 MINUTES

- Start the class with some questions like:
  1. Why some materials remain in the same form after a long time?
  2. Can the dump of these materials cause some pollution?
  3. Which type of pollution occurs from these dumps?



**DEVELOPMENT**

20 MINUTES

## Activity 1

- Review the term non-biodegradable materials.

### Presentation:

1. Look at pages 54 & 55 of the General Science textbook and choose the non-biodegradable materials.
2. Those materials which do not break down (decompose) by the normal natural process are called non-biodegradable materials.
3. Count various non-biodegradable materials from these pictures which will help the students to understand this term.

### Guided Practice:

1. Facilitate the students towards activity 4.5 on page 54 of the General Science textbook.
2. Ask them to observe the activity which they have done at home.
3. Those things which do not break down into simple substances are non-biodegradable substances. Therefore, for their destruction, some chemical methods are used.
4. Tell them that these materials affect our environment badly.

### Activity 2:

1. Advise students not to throw away plastic and polythene items.
2. Tell them that they are agents which cause pollution wherever, they are thrown as they do not dissolve or get broken down.
3. Further, explain to them not to throw these bags because these dumps cause land pollution and water pollution.
4. Ask them to follow the principle of "4R" which is to **Refuse, Reduce, Reuse and Recycle** non-biodegradable materials.
5. The way to reduce non-biodegradable materials in the environment we should follow.

**Refuse:** Refuse to throw garbage in water and land, refuse to use polythene bags and excess fertilizers. Refuse to allow wastes from factories into water resources.

**Reuse:** Reuse materials after passing cleaning and recycling processes.

**Reduce:** Reduce the use of fertilizers. Reduce the burning of fossil fuels.

**Recycle:** Recycle the waste materials and recycle rubber.



### CONCLUSION / SUM UP

3 MINUTES

- Ask few questions to check the students learning
1. What are non-biodegradable materials?
  2. What are their effects on the environment?
  3. What is meant by refuse, reuse, reduce and recycle of non-biodegradable materials?
  4. How can we minimize the effect of non-biodegradable materials?



### ASSESSMENT

5 MINUTES

- Separate non-biodegradable things from biodegradable things in the given list
- Cow dungs, plant residue, plastic buckets, agriculture wastes, fruits, vegetables, glass and metal scrap.



### HOMEWORK / FOLLOW UP

2 MINUTES

- Make a table of various non-biodegradable materials present in your home garbage, how can you reduce it.

# PHYSICAL CHANGES OBSERVED IN EVERYDAY LIFE



## STUDENT LEARNING OUTCOMES

- Identify observable changes in materials that do not result in new materials with different properties (e.g., dissolving, crushing aluminum can)
- Recognize that matter can be changed from one state to another by heating or cooling (candle wax)

## INFORMATION FOR TEACHERS

- Follow the following instructions before starting the lesson.
  - Read textbook and topics carefully.
  - Keep in view the safety measures while students are performing activities in the group.
  - Plan and arrange the material needed for activities.
  - Know the detailed explanation of the contents according to the level of the students.
  - Use the following suitable method for the teaching of the topic.
    - Activity-based method
    - Lecture cum discussion
    - Demonstration
    - Project methods

### Keywords

Be clear about the scientific terms and processes like physical changes, shape, volume, matter, composition, dissolving, vapors, etc.

### Skills

Observation and identification skills are to be emphasized during the lesson



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Whiteboard, marker, duster, various samples of matter like salt sugar, beaker, china dish, burner, water, etc.



**INTRODUCTION**

**5 MINUTES**

- Start the class with some questions related to daily observations.
  - What happens to salt when it is placed in water?
  - Why salt disappears in water?
  - Does salt retain its properties in water?
  - What will happen to a candle when it is heated?
  - What happens to sugar when we add it to tea?

**Activity 1:**

1. As an opening activity, review that matter changes its physical appearance, this property of matter is called a physical change.
2. Properties associated with this change are called physical properties.

**Guided Activity:**

1. Demonstrate activity 5.1 on page 60 of the General Science textbook of Grade-5 by dissolving salt in water.
2. Explain: The physical appearance of salt seizes, when the same dissolved mixture is taken in a beaker, which is placed on a burner, the water will evaporate and the salt remains in the dish.
3. Tell students that this type of change is called a **'physical change.'**

**Activity 2:**

1. To recognize a physical change in matter, conduct activity 5.2 on page 61 of the General Science textbook Grade-5.
2. Divide students into suitable groups.
3. Provide candle wax to groups.
4. Ask groups to heat the candle wax and then let the liquid wax get cool.
5. Ask them to record their observations.
6. Explain that the modifications that took place by heating and cooling the candle wax are **'physical changes'** as the wax comes back to its original form on cooling.

**Recapitulation**

1. Which type of change is seen in the materials to be dissolved in water?
2. How dissolved salt is regained from the water?
3. Which state of salt can we find at room temperature?

**ASSESSMENT**

3 MINUTES

- Ask students to make a list of physical changes they see in their environment.

**HOMEWORK / FOLLOW UP**

2 MINUTES

- Students will be asked to prepare a chart of various materials that can be dissolved in water.

# PROCESS INVOLVED IN CHANGES IN THE STATES OF MATTER



## STUDENT LEARNING OUTCOMES

- Describe and demonstrate the processes of melting, freezing, boiling, evaporation and condensation.

## INFORMATION FOR TEACHERS

- Follow the given instructions before the lesson:
  - Read the topic in the General Science textbook Grade v and other relevant resources available.
  - Ensure safety measures while students are performing activities in the group.
  - Plan and arrange the material needed for the activities.
  - Know the detailed explanation of the contents.
  - Use the suitable method for the teaching of the topic.
    - Activity-based method
    - Lecture cum discussion
    - Demonstration
    - Project methods

**Keywords** Matter, melting, freezing, boiling, evaporation and condensation.

**Skills** Observation and classification skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Whiteboard, marker, duster, charts, samples of solids, liquid, beakers, dishes and burner.



**INTRODUCTION**

**5 MINUTES**

- Ask the following questions to build the interest of students what is the matter?
  - What are the examples of matter around us?
  - Does matter change its form or state?
- After discussing the above questions, announce the topic process involved in **“Changes in states of Matter”**

**Activity 1:**

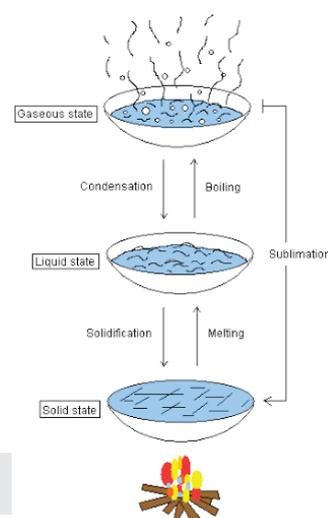
1. Start the lesson with the help of activity 5.3 on page 61 of the General Science textbook.
2. Students have done this activity in the previous class, and they know a physical change happened, now the teacher will relate the change of wax to liquid is called the process of **melting**
3. The process in which solid-state changes into liquid state by absorption of heat is called melting.
4. The same activity will be demonstrated with ice as students are already familiar with the melting of ice.
5. Explain the scientific reason for the change of state when wax and ice absorb heat then their particles start vibrating faster and they get away from each other and convert to the liquid state.

**Guided activity:**

1. During this activity, ask students to share their experiences about the **freezing** of water when it is kept in the freezer.
2. Heat is released from the water and their molecules come closer to each other resulting in a solid state.
3. Refer students to the General Science textbook page 61.

**Activity 2**

1. This activity is performed for the recognition of the processes of **boiling** and **evaporation**. For this purpose, the teacher will keep a beaker of water on the burner and students will record changes occurring in the liquid.
2. Refer students to page 62 of the General Science textbook to get help for their observations.
3. Based on this observation, tell students that the temperature at which liquid changes into a vapor state is called boiling.
4. While **evaporation** is a process of changing the liquid state into the vapor state.
5. Due to boiling the space between the particles is increased and this leads to the evaporation of liquid.

**Recapitulation:**

- To recapitulate the topic, ask the following questions.
1. What is evaporation?
  2. What is melting?
  3. Melting takes place in which state of Matter?



- Ask following questions to check the learning of the students
1. What happens to water molecules when heat is released from them?
  2. What happens when solid ice absorbs heat?
  3. What happens when vapors of water are cooled?

4. What are the various states of water?



### ASSESSMENT

5 MINUTES

- Ask students to perform an activity by heating piece of ice in the beaker and record their observations, which will be discussed in the class.



### HOMEWORK / FOLLOW UP

2 MINUTES

- Solve questions 1 and 2 (parts i and ii) from the exercise given in the General Science textbook on page 70 in your notebooks.

# DISSOLVING SUBSTANCES IN WATER



## STUDENT LEARNING OUTCOMES

Identify ways of accelerating the process of dissolving materials in a given amount of water and provide reasoning (i.e., increasing the temperature, stirring and breaking the solid into smaller pieces increases the process of dissolving).

## INFORMATION FOR TEACHERS

- Follow the given instructions before the lesson
- 1. Read the topic carefully, also use additional available resources materials to clarify the concept.
- 2. Ensure safety measures while students are performing activities in the group
- 3. Plan and arrange the material needed for activities
- 4. Know the detailed explanation of the contents.
- 5. Use the suitable method for the teaching of the topic.
  - ◇ Activity-based method
  - ◇ Lecture cum discussion,
  - ◇ Demonstration
  - ◇ Project methods

**Keywords** Dissolving, solution, temperature

**Skills** Observation and identification skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Whiteboard, marker, duster, sugar, water, burner, stirrer.



**INTRODUCTION**

5 MINUTES

- Ask the following questions to motivate students towards the day's topic.
- 1. What happens when some amount of salt is mixed in water?
- 2. What happens when some amount of sugar is mixed in water?
- 3. Which substance will take more time for its dissolution in water?



**DEVELOPMENT**

20 MINUTES

### Opening Activity 1:

1. Tell students (with the help of activity 5.1 on page 60 of General Science textbook grade 5) that salt dissolves in water.

- Explain that a substance that dissolves in a liquid and is in less quantity is called **solute** while a substance that dissolves a solute, resulting in a solution and is in larger quantity is called a solvent.
- The combination of solute and solvent is **called Solution**.

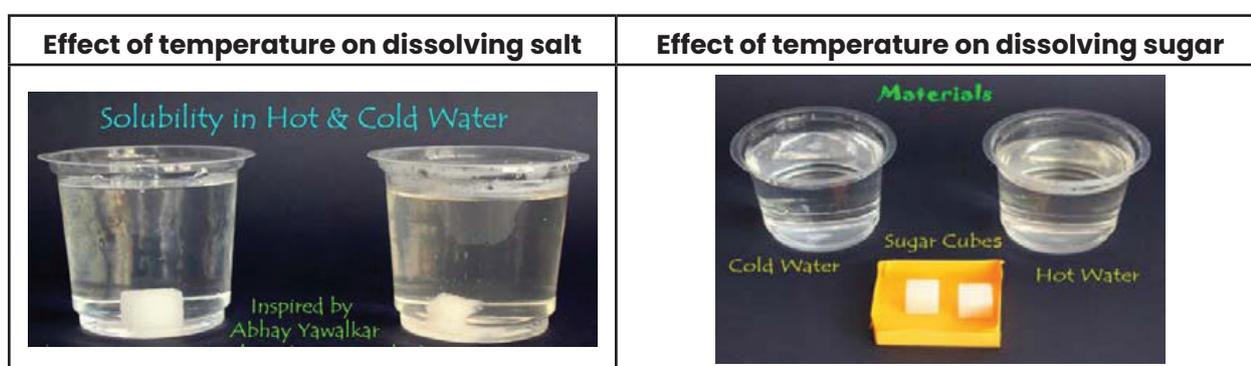
### Guided Practice:

- To relate the above information with the present SLO student will be referred to activity 5.4 on page 63 of the General Science textbook.

**NOTE:** This activity will be performed by the student under the supervision and monitoring of the teacher based on observations gathered by students, teacher will tell them that the process of dissolving is accelerated by stirring.

### Activity 2:

- Refer students to the General Science textbook on page 64 for activity 5.5.
- Help students perform this activity under your supervision.
- Explain the reason why substances are more quickly dissolved in water by increasing the temperature of the water.



- Sum up the activity on the result of the experiment.



### CONCLUSION / SUM UP

3 MINUTES

- To conclude the lesson, ask a few questions:
  - What will be the effect of stirring on the dissolution of sugar in water?
  - What will happen to the dissolution process when the temperature of the solvent is increased?
  - What is a solution?



### ASSESSMENT

5 MINUTES

- Give activity 5.6 on page 64 of the General Science textbook.
- Students to perform under the supervision of the teacher.
- During the activity, explain why small pieces of substance dissolve more quickly than a large pieces of a substance?



### HOMEWORK / FOLLOW UP

2 MINUTES

- Ask students to prepare a list of substances in your kitchen under the supervision of parents whose dissolving capabilities are increased at increased temperature.

# DILUTE AND CONCENTRATED SOLUTION



## STUDENT LEARNING OUTCOMES

- Distinguish between strong and weak concentration of simple solutions

## INFORMATION FOR TEACHERS

- Follow the given instructions before the lesson:
  1. Read textbook and topics carefully.
  2. Keep in view the safety measures while students are performing activities in the group.
  3. Plan and arrange the material needed for the activities.
  4. Know the detailed explanation of the contents.
  5. Use the following suitable method for the teaching of the topic.
    - ◇ Activity-based method
    - ◇ Lecture cum discussion
    - ◇ Demonstration
    - ◇ Project methods

**Keywords** Solution, concentration, dilute and strong concentration, dark and light

**Skills** Observation and classification skills to be emphasized during the lesson



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Whiteboard, markers, duster, beakers, water, coloured drink.



**INTRODUCTION**

5 MINUTES

- Ask few questions to motivate students towards learning.
  - ◇ What is solution?
  - ◇ What is solute?
  - ◇ What is solvent?



**DEVELOPMENT**

20 MINUTES

### Activity 1:

1. Start the lesson by reviewing the term solution, solvent and solute.
2. A substance in a small quantity in a solution is called the solute.
3. A substance in a large quantity in a solution is called a solvent.
4. A solution is a combination of solute and solvent. It means solute is the factor that can

change the concentration/strength of the solution. For example salt would be the solute and solvent would be water, if you combine these you will get a salt-water solution.

### Guided Practice:

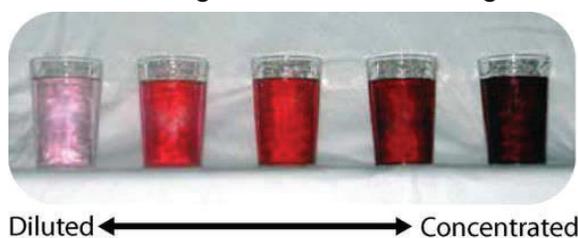
1. Divide students into suitable groups.
2. Refer students to activity 5.8 on page 65 of the textbook.
3. Monitor the whole activity by putting an equal amount of water in all five beakers and a different amount of coloured drink in each one, the students will record their observation.
4. Explain that the light colour seen in the beaker has diluted concentration and the beaker with dark colour has concentrated.

### Activity 3:

1. Ask students to add salt in beakers having an equal amount of water in the following amount:

1	2	3	4	5
No salt	½ spoon	1 spoon	2 spoons	3 spoons

2. By tasting the water of beaker arrange them in order of higher concentration



### Recapitulation:

- To check the students learning teacher will ask the following questions:
  1. What is a dilute solution?
  2. What do you mean by the concentrated solution?
  3. How is the solution formed?



### CONCLUSION / SUM UP

3 MINUTES

- To conclude the lesson teacher will focus on the following points:
  - ◇ The solution is formed by the combination of solute and solvent.
  - ◇ A solution with a minor quantity of solute is known as a dilute solution.
  - ◇ A solution having a greater quantity of solute is called a concentrated solution



### ASSESSMENT

5 MINUTES

1. Conduct Activity 5.6 on page 64 of the textbook under supervision.
2. Based on the observation made by the students during the activity the teacher will explain that particles of small-size substance (solute – powdered sugar) are more quickly dissolved than that of a larger sizes substance (solute – sugar cube).



### HOMEWORK / FOLLOW UP

2 MINUTES

1. Ask students to write how dissolving substances in water can be increased.
2. Ask students to write the definition of solute, solvent and solution in your notebooks.

# CHEMICAL CHANGES IN EVERYDAY LIFE



## STUDENT LEARNING OUTCOMES

- Identify observable changes in materials that make new materials with different properties (i.e., decaying, burning, and rusting)

## INFORMATION FOR TEACHERS

- Follow the given instructions before the lesson:
  - Read textbook and topics carefully.
  - Keep in view the safety measures while students are performing activities in the group.
  - Plan and arrange the material needed for the activities.
  - Know the detailed explanation of the contents.
  - Use the following suitable method for the teaching of the topic.
    - Activity-based method
    - Lecture cum discussion
    - Demonstration
    - Project methods

**Keywords** Decaying, burning, rusting, decomposition and reaction.

**Skills** Observation and classification to be emphasized during the lesson



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Writing board, markers, duster, chart, samples of leaves which have changed appearance and composition, burnt wood and rusted iron pieces



**INTRODUCTION**

5 MINUTES

- What happens to leaves, and other parts of plants buried in the soil?
- What happens to iron objects exposed to moisture?
- How does wood burn?
- After discussing these questions teacher will announce the day's topic as **Chemical Changes in Everyday Life**.



**DEVELOPMENT**

20 MINUTES

### Activity 5.1:

- Show leaves and other parts of plants that have lost their original appearance and

composition

2. Tell students that these leaves have lost their original appearance and shape as they were half-buried in the soil.
3. Explain: in the soil, they are in the process of decomposing which is also called decaying. The dead bodies of living things are decomposed by bacteria and fungi.
4. Refer them to the General Science textbook page 66 for a figure under the heading "decaying" to get some more about decaying.

### Guided Practice:

1. Refer students to page 66 of the General Science textbook to see the figure under the heading "burning"
2. Demonstrate a burning candle, the wax in the candle burns with the oxygen of air this process is called **combustion**.



### Activity 2:

1. Demonstrate activity 5.9 on page 67 General Science textbook in class.
2. Ask the students to record their observations.
3. Ask students randomly about their observations and note them on the writing board.
4. Conclude this activity:

**Iron + oxygen + water**  $\longrightarrow$  **iron oxide (rusted iron)**

### Recapitulation:

- Ask few questions as a formative evaluation
  - ◇ Why dead bodies lose their appearance and structure in soil?
  - ◇ Why wood, paper and candle burn?
  - ◇ Why the shape and appearance of iron things change when exposed to moisture?



### CONCLUSION / SUM UP

3 MINUTES

1. Briefly explain decaying, burning, and rusting.
2. Some residue/remaining of living things lost their appearance in the soil.
3. There they are decomposed by bacteria and fungi.
4. This process is known as decay.

**Burning:** carbon of wood, paper, etc. burns with oxygen and the process is called burning.

**Rusting:** those iron things which are exposed to moisture react with oxygen and the process is called rusting.



### ASSESSMENT

5 MINUTES

1. Complete the equation:

**Iron + \_\_\_\_\_ + \_\_\_\_\_ = Rusting**

2. Refer students to page 67 of the General Science textbook.



### HOMEWORK / FOLLOW UP

2 MINUTES

- Ask students to compile a list of various things lying in their surroundings who have passed/passing through these three processes decaying, burning and rusting.

## LESSON

## 32

# DIFFERENCE BETWEEN PHYSICAL AND CHEMICAL CHANGES



## STUDENT LEARNING OUTCOMES

- Differentiate between physical and chemical change with examples.

## INFORMATION FOR TEACHERS

- Follow the given instructions before the lesson:
  1. Read textbook and topics carefully.
  2. Keep in view the safety measures while students are performing activities in the group.
  3. Plan and arrange the material needed for activities.
  4. Know the detailed explanation of the contents.
  5. Use the suitable method for the teaching of the topic like,
    - ◇ Activity-based method
    - ◇ Lecture cum discussion
    - ◇ Demonstration
    - ◇ Project methods

**Keywords** Physical change, chemical change, baking soda, vinegar, burning.

**Skills** Observation and classification skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Whiteboard, markers, duster, samples of vinegar, baking soda, water, ice, match, burner.



**INTRODUCTION**

**5 MINUTES**

- To motivate the student's teacher will ask few questions like:
  - ◇ What happens to salt when it is mixed in water?
  - ◇ What happens when water is kept in the freezer?
  - ◇ What happens when a piece of paper is burnt?
  - ◇ Can we restore burnt paper?

**Activity 1:**

1. Review the topic that materials change from one form to another.
2. A change in a matter which is reversible is called physical change and a change that is not reversible by ordinary chemical methods is called a chemical change.

**Heating of ice**

3. Demonstrate the activity by taking a piece of ice and heat it on the burner.
4. Ask students to observe that ice has changed from solid to liquid which is a **'physical change'**.
5. Ask the students when the same water is placed in the freezer it will again freeze to solid form which is a physical change.

**Guided Practice:**

1. Demonstrate an activity by taking vinegar and sodium bicarbonate and mix these in a large beaker. Ask students to observe the change.
2. Vinegar + sodium bicarbonate  $\longrightarrow$  sodium acetate + water + carbon dioxide
3. Ask the students, what types of gases are evolving from the beaker?
4. Explain that some bubbles are also formed in the beaker.
5. This shows the chemical change has taken place.
6. Now there is no vinegar and baking soda in the product.

**Activity 2:**

1. To reinforce the above chemical phenomenon (Chemical change), demonstrate another activity.
2. Take a piece of paper and burn it, as a result, ash and carbon dioxide will form.
3. Now explain that burning is also a chemical change.



**Recapitulation**

1. What type of change do we see when water is kept in the freezer?
2. What happens when a piece of paper is burnt?
3. What type of change do we see in a combination of warm milk and a spoon of yogurt?

**CONCLUSION / SUM UP**

3 MINUTES

- To conclude the lesson focus on the following points:
  - ◇ Physical change is a temporary change
  - ◇ In this, the internal composition of a matter does not change
  - ◇ It is easily reversible.
  - ◇ A chemical change is a permanent change
  - ◇ In this change, the internal composition of materials is changed, and new materials are formed
  - ◇ It is not reversible.

**ASSESSMENT**

5 MINUTES

- Assign activity 5.9 on page 67 of the General Science textbook to be performed in class by students. Monitor and facilitate students during the activity.

**HOMEWORK / FOLLOW UP**

2 MINUTES

- Tell the students to record/write five physical changes and five chemical changes that are taking place in their surroundings in their notebooks.

**Month**

**5**

# LIGHT, SOURCES OF LIGHT, LUMINOUS AND NON-LUMINOUS OBJECT



## STUDENT LEARNING OUTCOMES

- Identify natural and artificial sources of light
- Investigate the luminous and non-luminous objects in daily life

## INFORMATION FOR TEACHERS

- Follow the given instructions before starting the lesson
1. Read textbook and topic carefully. Also read additional available resources to clarify the concept.
  2. Ensure safety measures while students performing activities in groups
  3. Arrange the material needed during the lesson in advance.
  4. Plan the activities related to the topic.
  5. Clear the basic concepts of natural and artificial sources of light along with suitable examples related to daily life observation.
  6. Suitable methods for teaching these topics may be used like, Inquiry-based method, Activity-based method, Project method, Lecture cum demonstration.

**Keywords** Natural and artificial sources of light

**Skills** Observing, analyzing and predicting skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Blackboard /whiteboard, marker/ chalk and duster, General Science textbook grade-5, table, candle, lighter and pictures of sun and stars.



## INTRODUCTION

5 MINUTES

1. Ask the following few questions from the students to reflect on the previous knowledge. Write their responses one by one on the board.
  - ◇ Why cannot we see things at night?
  - ◇ Why we see stars and the moon at night?
  - ◇ Can you see stars and the moon in the daytime?
  - ◇ Name three objects, which give light.
2. After taking suitable answers from the students, teacher will announce the topic as **“Light and sources of light, Luminous and non-luminous object”**.



## DEVELOPMENT

20 MINUTES

- Start the class with some interesting facts given at the beginning of the chapter on page 74 General Science textbook:
  - Do you know?
  - Interesting Information
  - Points To ponder

### Activity 1:

- Make pairs of the students.
- Ask students to perform activity 6.1 on page 74 General Science textbook in pairs.
- Discuss and explain natural and artificial sources of light.
- Explain that the objects which **emit light are called Luminous Objects**. e.g. Sun emits its light. Other examples are stars, a torch, a candle, a filament of a bulb, hot Iron, and fireflies.

### Activity 2:

- Ask students to perform activity 6.2 on page 75 of the General Science textbook individually.
- Tell them to exchange their notebooks with each other and check the answers.
- Write the correct answers on the writing board.

**Non-luminous objects** that do not have their own source of light. These objects can only be visible due to luminous objects. Examples of non-luminous objects are the moon, planets, books, pencils, rubber and spoons.



## ASSESSMENT

5 MINUTES

- Ask the following question to assess the lesson:
  - Name at least three natural sources of light?
  - Name three artificial sources of light?
  - How will you differentiate between luminous and non-luminous objects?



## CONCLUSION / SUM UP

3 MINUTES

- The objects in which light is emitted are called Luminous object.
- The objects that do not have their own source of light are non-luminous.



## HOMEWORK / FOLLOW UP

2 MINUTES

- Make a list of luminous and non-luminous objects from your daily life observation and write it in your notebooks.

# TRANSPARENT, OPAQUE AND TRANSLUCENT OBJECT



## STUDENT LEARNING OUTCOMES

- Justify that light emerges from a source and travels in a straight line
- Investigate that light travels in a straight line
- Identify and differentiate between transparent, opaque and translucent objects in surroundings

## INFORMATION FOR TEACHERS

- Follow given instructions before the lesson
  1. Read the topic fully in the textbook.
  2. Keep in view the safety measures while students are performing activities in groups
  3. Plan and arrange the materials needed for activities.
  4. Know the detailed explanation of contents i.e., concept of nature of light, opaque and translucent objects.
  5. Suitable methods for teaching these topics are:
    - ◇ Inquiry-based method
    - ◇ Activity-based method
    - ◇ Project method
    - ◇ Lecture cum demonstration

**Keywords** Transparent, opaque and translucent.

**Skills** Observing, analyzing, classifying and predicting.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Writing board, marker/ chalk & duster, table, candle/ torch, glass, plastics bottle, glass, iron/plastic sheet, water, milk, tissue paper charts, pictures related activities, and cardboard.



## INTRODUCTION

5 MINUTES

1. Start the class with “**Points to Ponder and Interesting information**” given on page 77 of the General Science textbook. This will create curiosity in the students about the new topic.
2. Ask the following questions from the students to reflect on their previous knowledge and write their responses one by one on the writing board.
  - ◇ How does light travel in the classroom?
  - ◇ How are shadows of objects formed?
  - ◇ Name some objects through which light transmits?
  - ◇ How does the light travel?



## DEVELOPMENT

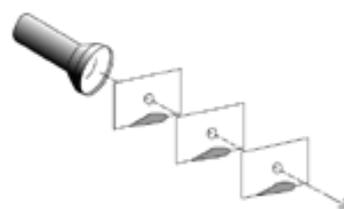
20 MINUTES

### Activity 1:

1. Demonstrate activity 6.3 on page 76 General Science textbook. Students must observe how light travels through different mediums.
2. When light completely passes through materials, such materials are called transparent. air, water, and clear glass.
3. When light passes partially through the objects it is called **translucent**, images formed will be fuzzy, unclear images e.g., wax paper, a single piece of tissue paper and vegetable oil.
4. When light falls on objects, which do not allow light to pass through them are called **opaque** e.g., book, wooden black, concrete, metallic material etc.

### Activity 2:

1. All students to open their books on page 77 of the General Science textbook and complete activity 6.4.
2. Call out the correct answers for students to check their work.
3. **Light travels in a straight line** and can be observed by keeping an object in the path of light. In daily life observation, we can see light travel in a straight line. Light emerging from the torch, headlights of a car, and lamps always travel in a straight line. Let us study in detail how does light travel in a straight line by performing the following activities
4. Divide the class into three groups A, B and C.
5. Assign activity 6.5 General Science textbook on page 78 to all groups and ask them to note observations.
6. Ask one student from each group to present their assigned task and observations.
7. Conclude the activity by summarizing the key points from the activity.



## ASSESSMENT

3 MINUTES

- Ask the following questions to assess the Learning of students
  1. Can you differentiate between transparent, translucent, and opaque objects?
  2. Give two examples of each: transparent, translucent, and opaque objects
  3. Light can be seen through all index card holes, why?
  4. How does the light travel?
  5. What would happen if the holes were smaller?



## CONCLUSION / SUM UP

5 MINUTES

1. When all the light passes through the materials, such materials are called transparent.
2. When light passes partially through the material, it is called translucent material.
3. Light always travels in a straight line
4. Opaque objects are those, in which light cannot pass through at all.



## HOMEWORK / FOLLOW UP

2 MINUTES

- Write the names of five objects which are transparent, translucent, and opaque from

# FORMATION OF SHADOWS, REFLECTION OF LIGHT



## STUDENT LEARNING OUTCOMES

- Explain the formation of shadows.
- Predict the location, size and shape of a shadow from a light source relative to the position of objects.
- Demonstrate that shiny surfaces reflect light better than dull surfaces.

## INFORMATION FOR TEACHERS

- Follow the given instructions before starting the lesson
  1. Read textbook and topic fully for developing a holistic picture
  2. Ensure safety measures while students are performing activities in groups
  3. Arrange the materials needed for activities and teaching AV aids
  4. Plan the activities related to the topic.
  5. Know the concept of shadow and its formation and reflection of light.

**Keywords** Reflection, shadow

**Skills** Observing, measuring, predicting



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Blackboard /whiteboard, marker/ chalk & duster, table, candle/ torch, shining surface plate/mirror and dull cardboard.



## INTRODUCTION

5 MINUTES

1. Ask the following questions from the students to reflect on their previous knowledge and write their responses one by one on the writing board.
2. Do you see your shadow during sunset and sunrise if yes, what is your observation?
3. Although the sunlight falls outside the classroom, you can see objects in your classrooms how does this happen?
4. What is meant by reflection?



## DEVELOPMENT

20 MINUTES

- Start the class with **“Points to Ponder”** given on page 79 General Science textbook.

### Activity 1:

1. Demonstrate to the students that how shadows are formed.
2. Ask students to copy you to form a shadow. (Activity 6.6 of General Science textbook on page 78 may be conducted for shadow formation in class.)

3. Explain the process of shadow formation for further clarity.

**Formation of shadows:** Shadows are formed when opaque objects or materials are placed in the path of rays of light. The opaque material does not let the light pass through it. The light rays that reflect the edges of the opaque material outline the shadow.

### Activity 2:

1. Discuss “**Points to Ponder**” and perform Activity 6.7 given on page 80 of the General Science textbook for creating interest of the students for thinking.

**Reflection of light:** When a ray of light approaches a smooth polished surface and the light ray bounces back, it is called the reflection of light.

2. Divide the class into appropriate groups and assign the following task.
3. All groups will perform Activity 6.7 on page 80 from the General Science textbook and note their observations
4. Ask one student from each group to present their assigned task with observations.
5. Conclude the activity by summarizing the main points of observation.



### ASSESSMENT

5 MINUTES

1. Ask the following questions to assess the lesson:
2. What happens when light falls on a smooth /polished surface?
3. How is an image formed by reflection from a smooth surface?
4. What is the size of the image of the object near to burning of a candle? (activity6.6 on page 79 General Science textbook)
5. What is the size of an image of the object away from the burning of a candle?



### CONCLUSION / SUM UP

3 MINUTES

1. Bouncing back of light from the smooth polished surface is called reflection of light
2. When an opaque object or material is placed in the path of a ray of light, the shadow is formed.



### HOMEWORK / FOLLOW UP

2 MINUTES

- Write your observation about your formation of shadow and its size in the following sheet.
- What time is the shadow small and at what time is the shadow large.

Items	Position of sun	Size of shadow
Formation of shadow	Sunrise	1. 2. 3.
	Sun at 12:00 Noon	1. 2. 3.
	Sunset	1. 2. 3.
Topic	Task	Observation

Reflection of light	When light falls on a plane mirror.	1. 2. 3.
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- Investigate Q4 part (ii) write your answers in your notebooks.

# SOUND, PROPAGATION OF SOUND



## STUDENT LEARNING OUTCOMES

- Describe and demonstrate how sound is produced by a vibrating body
- Identify variety of materials through which sound can travel

## INFORMATION FOR TEACHERS

- Follow the given instructions before the lesson:
  1. Read the textbook and topics fully for developing a holistic picture.
  2. Ensure safety measures while students are performing activities in groups.
  3. Arrange the materials needed for activities and teaching AV aids.
  4. Plan the activities related to the lesson/topics.
  5. Know the concept of sound and its production, transmission of sound from different materials.
  6. Use the following suitable methods for teaching these topics
    - ◇ Inquiry-based method
    - ◇ Activity-based method
    - ◇ Project method
    - ◇ Lecture cum demonstration

**Keywords** Sound, sound in different material

**Skills** Observing, analyzing, and predicting.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Blackboard /whiteboard, marker/ chalk, rubber band, grain of cone/wheat, music speaker, spoon, plane table water tub, plastic bottle, cutter, and water.



**INTRODUCTION**

5 MINUTES

- Ask the following questions from the students to reflect on the previous knowledge. Write their responses one by one on the board.
  - ◇ Do you recognize the sound of your friend, take responses?
  - ◇ Do you recognize the sound of the school bell, beating drum, blowing of the wind, thunder, etc.? Write responses.
  - ◇ How these sounds reach your ears?



**DEVELOPMENT**

20 MINUTES

1. Ask students what type of sounds they like to hear or sounds that make them happy, list the answers on the writing board.

2. Ask them if anyone knows how sound is produced? Encourage the students to give their opinion.
3. Demonstrate activity 6.8 of the General Science textbook on page 81. Students will observe the vibrations of the speaker and the jumping of the grains.
4. Explain how sound is produced and how it travels through a material medium?
5. Sound is produced due to the vibration of different objects. Sound travels as a longitudinal wave through a material medium. Sound travels as successive compressions and rarefactions in the medium. In sound propagation, it is the energy of the sound that travels and not the particles of the medium.
6. Explain:
  - ◇ Sound can travel through liquid, solid and gases (water, wood, air) as sound travels more quickly through solids than through liquids and gases because the molecules of a solid are closer/tightly bound together and, therefore, can transmit the vibrations (energy) faster.
  - ◇ Sound travels most slowly through gases because the molecules of a gas are the farthest apart.

### Activity 1:

1. Divide the class into four groups by labeling them A, B, C and D.
2. Groups to exchange their places and do observations of activities 6.9 and 6.10 General Science textbook.
3. Assign the task:
  - ◇ Group A: Put maize grain on the surface of the music loudspeaker and switch on and note observations.
  - ◇ Group B: Put the wheat grain on the surface of the plate and vibrate slightly with a steel spoon and note the observation.
  - ◇ Group C: Perform 6.9 General Science textbook on page 82
  - ◇ Group D: Perform 6.10 General Science textbook on page 82
4. Ask one student from each group to present their assigned task along with observations.
5. Conclude the activities by summarizing the key points of the above activities.



### ASSESSMENT

3 MINUTES

- Ask the following questions to assess the learning of the students.
  1. How sound is produced?
  2. How does sound travel?
  3. How can you recognize the ticking of a clock, the sound of musical instruments and the sound of birds chirping?



### CONCLUSION / SUM UP

5 MINUTES

1. Sound is produced due to the vibration of different objects
2. Sound travels more quickly through solids than liquids and gases because of the molecular arrangement in liquids and gases



### HOMEWORK / FOLLOW UP

2 MINUTES

1. Make a list of sounds that you hear in your daily life and write it in your notebooks.
2. Make a list of sounds that make you feel pleasant and unpleasant, separately and write it your notebook.

# SPEED OF SOUND IN DIFFERENT MATERIAL, INTENSITY OF SOUND



## STUDENT LEARNING OUTCOMES

- Identify that speed of sound differs in solids, liquids and gaseous medium
- Define and describe the intensity sound with examples

## INFORMATION FOR TEACHERS

- Follow the given instructions before the lesson:
  1. Read the textbook and topics fully for developing a holistic picture.
  2. Ensure safety measures while students are performing activities in groups.
  3. Arrange the materials needed for activities and teaching AV aids.
  4. Plan the activities related to the lesson/topics.
  5. Know the concept of sound and its production, transmission of sound from different materials.
  6. Use the following suitable methods for teaching these topics
    - ◊ Inquiry-based method
    - ◊ Activity-based method
    - ◊ Project method
    - ◊ Lecture cum demonstration

**Keywords** Speed, intensity

**Skills** Observing, analyzing, predicting.



## MATERIALS / RESOURCES REQUIRED

- Blackboard /whiteboard, marker/ chalk & duster, iron fence, and a bell.



## INTRODUCTION

5 MINUTES

1. Ask the following questions from the students to reflect on the previous knowledge. Write their responses on the writing board.
  - ◊ As you have already performed activities related to the propagation of sound, put your ear on the surface of the wooden table and ask your friend to tap it gently, do you hear any sound?
  - ◊ Can you guess through which medium the sound traveled?
2. Name a few sounds like the chirping of birds, traffic noise, the sound of a flute, the thunder of clouds and ask the students to classify the faint or low and loud sound, write the responses on board.
3. Locate /select an iron fence near your school and students will visit under your supervision to perform activity 6.11 on page 82 of the General Science textbook and note the observations.

### Activity 1:

1. To identify the intensity of sound students will perform activity 6.12 on page 83 of the General Science textbook.
2. Explain that:
  - ◇ The intensity of sound depends on the loudness of the sound.
  - ◇ Tell students that loudness of sound depends on the distance of the source of sound from the listener.

### Activity 2:

1. Students will conduct activity 6.13 given on page 85 of G.Sc textbook.
2. The intensity of the sound will be observed by the students.



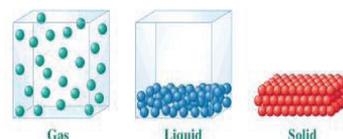
### DEVELOPMENT

20 MINUTES

- Explain the topic speed of sound in solid, liquid and Gasses with help of particles arrangements on charts.

#### 1. Sound in solid:

- ◇ Sound travels by pushing particles, in solid particles are closely packed, there is not much space between the particles.
- ◇ They vibrate in fixed positions. As a result, the sound is emitted quickly between particles, that is why sound travels fastest in solids (explain with the help of the diagram).



2. Similarly, explain liquid and gases along with suitable examples and also conclude that "sound cannot travel through a vacuum" by using available teaching AV aid and write key points on black/ whiteboard by involving the students
3. Explain the topic intensity of sound by giving suitable examples from daily life.



### CONCLUSION / SUM UP

3 MINUTES

1. Speed of sound is greater in solid than liquid and gasses.
2. The intensity of sound decreases with an increase of distance from the source.



### ASSESSMENT

5 MINUTES

1. How does the sound travel in solid?
2. Why the sounds travel fast in solids than liquid?
3. Why does sound can not travel in a vacuum?



### HOMEWORK / FOLLOW UP

2 MINUTES

1. Students to attempt Question 3 part (iv) from exercise given on page 90 of the General Science textbook.
2. Write factors affecting the intensity of sound?

## LESSON

## 38

# NOISE, HARMFUL EFFECTS OF NOISE ON HUMAN HEALTH, CONTROLLING NOISE POLLUTION



## STUDENT LEARNING OUTCOMES

- Define noise and its harmful effects on human health
- Appreciate the role of human beings in reducing noise pollution

## INFORMATION FOR TEACHERS

- Follow the given instructions before the lesson:
  1. Read the textbook and topics fully for developing a holistic picture.
  2. Ensure safety measures while students are performing activities in groups.
  3. Arrange the materials needed for activities and teaching AV aids.
  4. Plan the activities related to the lesson/topics.
  5. Know the concept of sound and its production, transmission of sound from different materials.
  6. Use the following suitable methods for teaching these topics
    - ◇ Inquiry-based method
    - ◇ Activity-based method
    - ◇ Project method
    - ◇ Lecture cum demonstration

**Keywords** Speed and intensity of sound

**Skills** Observing, analyzing, and predicting



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Blackboard /whiteboard, marker/ chalk & duster, charts, and markers/pencils, posters (noisy environments, traffic sounds, harmful effects, and Ideal environment).



## INTRODUCTION

5 MINUTES

- Ask the following questions from the students to reflect on their previous knowledge write their responses on the board.
  1. Which sound has a pleasant effect on your mind?
  2. Which sound creates an unpleasant effect on your mind?
  3. Which sound do you feel is harsh and irritating in daily life?



## DEVELOPMENT

20 MINUTES

### Activity 1:

1. Ask the students to open page 85 of the General Science textbook and perform activity 6.14 for identifying pleasant and unpleasant sounds.
2. Explain:
  - ◇ Noise pollution is described as any disturbing or unwanted sound that interferes with or harms human health or wildlife. Noise pollution is an invisible danger.
  - ◇ Noise pollution is created from the following:
    - Unnecessary usage of horns
    - Unnecessary usage of fireworks
    - Industrial noise
    - Construction noise
    - Noise from transportation such as railway and aircraft
3. Discuss the harmful effects of noise on human health:
  - ◇ **Hypertension:** It is a direct result of noise pollution which is caused due to elevated blood levels for a longer duration.
  - ◇ **Hearing loss:** Constant exposure of human ears to loud noise that is beyond the range of sound that human ears can withstand damages the eardrums, resulting in loss of hearing.
  - ◇ **Sleeping disorders:** Lack of sleep might result in fatigue and low energy level throughout the day affecting everyday activities. Noise pollution hampers the sleep cycles leading to irritation and an uncomfortable state of mind.

### Activity 2:

1. Divide the class into three groups A, B, and C.
2. Provide the charts and markers to each group, then assign the tasks following:
  - ◇ Group A: Make a list of sounds that create noise in our daily life
  - ◇ Group B: Make a list of harmful effects of noise on human health
  - ◇ Group C: write ways to control the noise pollution
3. Ask each group to display the chart and present their task respectively.
4. Conclude by summarizing the key points from all activities.



## ASSESSMENT

5 MINUTES

- Ask the following questions to assess the lesson.
  1. Define noise?
  2. What is meant by noise pollution?
  3. Write two effects of noise pollution on human health?
  4. Write two ways to control noise pollution.



## CONCLUSION / SUM UP

3 MINUTES

1. Noise is unwanted sound considered unpleasant
2. Noise pollution is described as any disturbing or unwanted sound

3. Noise pollution creates a bad effect on human health like Sleeping disorders, Hypertension, Hearing loss, etc.



## **HOMEWORK / FOLLOW UP**

2 MINUTES

1. Write the names of things/machines which create noise pollution in our daily life?
2. Write at least three ways to minimize noise pollution?

# STATIC ELECTRICITY



## STUDENT LEARNING OUTCOMES

- Explain the phenomena of static electricity in everyday life
- Describe charges and their properties

## INFORMATION FOR TEACHERS

- Follow given instructions before the lesson
  1. Read topic fully
  2. Ensure safety measures while students are performing activities in groups
  3. Plan and arrange the material needed for activities.
  4. A detailed explanation of contents i.e. Static electricity, charges, and their properties.
  5. Use the following suitable methods for teaching the topic may be used.
    - ◇ Inquiry-based method
    - ◇ Activity-based method
    - ◇ Project method
    - ◇ Lecture cum demonstration

**Keywords** Static electricity, charges

**Skills** Observing, analyzing, predicting



## DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD

35 minutes / 01 period



## MATERIALS / RESOURCES REQUIRED

- Writing Board /whiteboard, Marker/ chalk & duster textbook of the General Science Grade -5, plastics comb, pieces of papers, balloons, two wooden stands, woolen cloth etc.



## INTRODUCTION

5 MINUTES

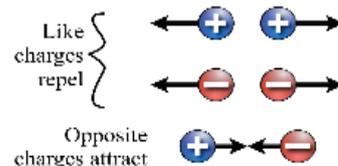
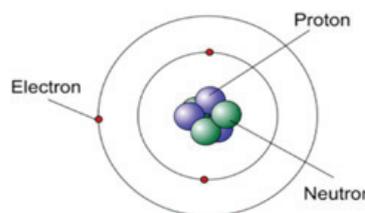
- Ask the following few questions randomly from the students to reflect on the previous knowledge. Write their responses one by one on the board.
  1. What are the smallest particles in the composition of matter?
  2. What are other parts of an atom?
  3. Do you know the location of electrons, protons, and neutrons in an atom?
  4. Why the bulb gives light and electric fan blow air?
  5. When electricity is off from the grid station what happens in daily routine activities /work?



## DEVELOPMENT

20 MINUTES

1. Explain the topic by using available teaching A.V aids, and write key points on the writing /whiteboard by involving students.
2. Explain:
  - ◇ All material objects are composed of extremely small particles called atoms.
  - ◇ An atom consists of further smaller particles electrons, protons, and neutrons.
  - ◇ Electrons are negatively charged particles and located in the orbit of an atom, protons are positively charged particles.
  - ◇ Protons located in the nucleus and neutrons are neutral particles located in the nucleus of the atom.
3. Like charges always repel each other and unlike charges attract each other.



Tell students that:

4. Electricity is commonly known as the electric current which is the flow of charges from one place to another place in the circuit (Like copper, aluminum, silver) having free electrons.
5. Now divide the class into three groups by labeling them A and B and C and assign the task:
  - ◇ Group A. Activity 7.1 General Science Textbook on page# 93 and note observations
  - ◇ Group B. Activity 7.2 General Science Textbook on page# 94 and note observations
  - ◇ Group C. Activity 7.3 General Science Textbook on page# 95 and note observations
6. One student from each group will present their assigned task along with their observations.
7. Conclude these activities by summarizing the key points and demonstrating each experiment to the whole class.



## ASSESSMENT

3 MINUTES

- Ask the following questions to assess the lesson:
  1. When two balloons are rubbed with a woolen cloth and brought together what will happen?
  2. Why pieces of paper get attracted to the comb?
  3. When the plastic comb is pulled through dry hair, what will be the charge on the plastic comb?



## CONCLUSION / SUM UP

5 MINUTES

1. A Charge is a basic property of matter.
2. Electricity is produced by the flow of electric charges through the material.
3. Like charges always repel each other and unlike charges always attract each other.



## HOMEWORK / FOLLOW UP

2 MINUTES

1. Name of some electric appliances used in daily life
2. Write at least five advantages of electricity in daily life
3. Write at least two disadvantages of electricity in daily life

**Month**

**6**

# ELECTRIC CURRENT



## STUDENT LEARNING OUTCOMES

- Differentiate between conductor and insulator from daily life
- Describe flow of electric current in an electric circuit
- Describe and design an electric circuit and explain its component

## INFORMATION FOR TEACHERS

- Follow given instructions before the lesson:
  1. Read topic fully.
  2. Ensure safety measures while students are performing activities in groups.
  3. Plan and arrange the material needed for activities.
  4. A detailed explanation of contents i.e. Static electricity, charges, and their properties.
  5. Suitable methods for teaching the topic may be used like:
    - ◇ Inquiry-based method
    - ◇ Activity-based method
    - ◇ Project method
    - ◇ Lecture cum demonstration

**Keywords** Electric current, circuit, and its components, conductor, and Insulator.

**Skills** Observing, analyzing, predicting



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Writing board, marker/ chalk & duster General Science textbook of Grade-5, conducting wire, electric cell, switch, bulb/LED, aluminum foil, small block wood, iron wire, copper, eraser, glass strip, plastic ruler.



## INTRODUCTION

5 MINUTES

- Ask the following questions randomly to reflect on the previous knowledge write their responses one by one on the board.
  1. When we switch on, the bulb gives light why?
  2. When electricity is off, we cannot switch on the Television why?
  3. How current passes through the bulb?
  4. Why electricians wear plastic gloves while doing electrical work?
  5. The electricity can pass through which mediums?



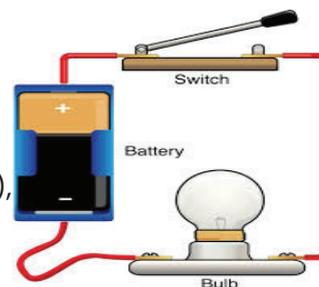
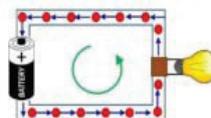
## DEVELOPMENT

20 MINUTES

1. Explain the topic by using available teaching AV aids and write key points on the writing board by involving students.
2. Explain that:
  - ◇ In some objects like copper, aluminum, silver, Iron, etc. the electrons move freely within the material.
  - ◇ These electrons are called free electrons. To make these electrons flow in one direction, a force is needed, which is provided by a battery or cell.
  - ◇ The flow of these electrons is called electric current.
  - ◇ The path through which these electrons flow is called a circuit.
  - ◇ Often the circuit consist of connecting wires, battery (Dry cells), Keys, bulbs, LED as shown in figures.
3. Conductors: The material which passes the electricity is called conductors like Alunuim, silver, iron, copper, etc.
4. Insulators: The material which does not pass the electricity is called Insulator like plastics, wood, Rubber, etc
5. Now divide the class into two groups by labeling them A and B and assign tasks as:
  - ◇ Group A. Activity 7.4 General Science textbook on page # 96 and note observations
  - ◇ Group B. Activity 7.5 General Science textbook on page # 98 and note observations
6. One student from each group will present their assigned task along with observation.
7. Conclude these activities by summarizing the key points.

### What is Electric Current?

(Direction of Flow of Current)



## ASSESSMENT

3 MINUTES

- Ask the following questions to assess students about the lesson:
  1. Define current
  2. Tell the names of some elements which are needed for electric circuit
  3. Differentiate between conductor and insulator with examples



## CONCLUSION / SUM UP

5 MINUTES

1. The rate of flow of electrons in a circuit is called current
2. The path through which the current flow is called a circuit.
3. The material through which the current can pass is a conductor and the material which does not allow to flow current is Insulator



## HOMEWORK / FOLLOW UP

2 MINUTES

- Make a list of things that are connected with the electrical wiring circuit in your house.

# MAGNET, MAGNETIC AND NON-MAGNETIC MATERIALS, PROPERTIES OF MAGNET



## STUDENT LEARNING OUTCOMES

Recognize that magnets can be used to attract some metallic objects

Describe and demonstrate that magnets have two poles and that like poles repel and opposite poles attract.

## INFORMATION FOR TEACHERS

- Follow given instructions before the lesson:
  1. Read topic fully in the textbook and in other textbook material available in the school.
  2. Ensure safety measures while students are performing activities in groups
  3. Plan and arrange the material needed for activities.
  4. A detailed explanation of contents i.e. Static electricity, charges, and their properties.
  5. Suitable methods for teaching the topic may be used.
    - ◇ Inquiry-based method
    - ◇ Activity-based method
    - ◇ Project method
    - ◇ Lecture cum demonstration

**Keywords** Magnet

**Skills** Observing, analyzing, classifying, and predicting



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Writing board, marker/ chalk and duster General Science textbook of grade 5, magnet, wooden stand, papers pens, iron filling, pencils, rubber and thread string,



## INTRODUCTION

5 MINUTES

- Ask the following questions from students randomly from the students to reflect on the previous knowledge, write their responses one by one on the board.
  1. Have you seen a magnet, if yes what is your observation about a magnet?
  2. How you can recognize magnets from other metallic substances?
  3. What do you know about the magnetic poles?



## DEVELOPMENT

20 MINUTES

1. Explain the topic by using available teaching audio-visual aids and write key points on the writing/whiteboard by involving the students.
2. A **magnet** is an object (generally a metal bar) that has a North and South Pole when it is freely suspended its one end move towards the earth's North Pole and the other moves towards the South Pole and this bar is called a bar magnet.

### Properties of a magnet

- Following are the basic properties of a magnet:
  - ◇ When a magnet is dipped in iron filings, we can observe that the iron filings cling to the end of the magnet as the attraction is maximum at the ends of the magnet.
  - ◇ Magnetic poles always exist in pairs.
  - ◇ Like poles repel while unlike poles attract.
  - ◇ The magnetic force between the two magnets is greater when the distance between these magnets is lesser.

### Activity I:

1. Discuss the Interesting Information given on page 102 of the General Science textbook, about how Greeks discovered magnets.
2. Show the different shapes of the magnets by drawing on the writing board and the students will match them with the drawings in the textbook on page 102 and label them on the board.

### Magnetic and non-magnetic material:

1. The materials which are attracted towards a magnet are magnetic material e.g., iron, nickel or cobalt.
2. The materials which are not attracted towards a magnet are non-magnetic e.g., Rubber, pencil, stone feather, and leather.
3. Now divide the class into three groups by naming them A, B, and C and assign:
  - ◇ Group A. Activity 7.7 General Science textbook on page 101 and note observations
  - ◇ Group B. Activity 7.8 General Science textbook on page 102 and note observations
  - ◇ Group C. Activity 7.9 General Science textbook page on 103 and note observations
4. Students from each group will demonstrate and present their observations and findings of the experiment to the class.
5. Explain the experiment with more information.
6. Conclude these activities by summarizing the key points and discussing "**Points to Ponder** and **Do you Know?**" given on page 103 of the General Science textbook.



## ASSESSMENT

5 MINUTES

- Ask the following questions to assess the lesson:
  1. What is a magnet?
  2. Tell two properties of a magnet
  3. Differentiate between magnetic and non-magnetic material



## CONCLUSION / SUM UP

3 MINUTES

1. A magnet is a bar, when it is freely suspended its one end-point towards the North Pole and the other points towards the South Pole.
2. Like poles repel while unlike poles attract each other.
3. The materials which get attracted towards a magnet are magnetic material and which are not attracted towards a magnet are non-magnetic materials



## HOMEWORK / FOLLOW UP

2 MINUTES

1. Make a list of magnetic and non-magnetic materials in daily life observations.
2. Write three applications of magnetic devices which we use in daily life.

# PROPERTIES OF A MAGNET, EARTH—A HUGE MAGNET



## STUDENT LEARNING OUTCOMES

- Identify earth as huge magnet and demonstrate it with an experiment

## INFORMATION FOR TEACHERS

- Follow the given instructions before the lesson:
  - Read textbook and topics carefully.
  - Ensure safety measures while students are performing activities in the group.
  - Plan and arrange the material needed for activities.
  - Know the explanation of the contents.
  - Use the suitable method for teaching the topic such as activity-based methods lecture cum discussion, demonstration and project method.

**Keywords** magnet and its properties

**Skills** classification, observation, prediction



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Writing board, charts, duster, maker/chalk, pencil, rubber, still pins, copper wire, iron nails and stone.



## INTRODUCTION

5 MINUTES

- Ask the following few questions from students randomly from the students to reflect on the previous knowledge, write their responses one by one on the writing board.
  - What is a magnet?
  - How many poles are there in a magnet?
  - What is a pole?
  - what poles attract each other and what poles repel each other?
  - When we suspend the magnet freely it moves in which direction?
- After discussing these questions announce the topic as "Properties of Magnet and Earth –a huge Magnet".



## DEVELOPMENT

20 MINUTES

- Explain the topics by using available teaching A.V aids and write key points on the writing/ whiteboard by involving students.
- Demonstrate that like poles attract each other and unlike poles repel each other by taking

two bar magnets.

3. Divide the class into three groups A, B and C.
4. Assign the following task like:
  - ◇ Groups A activity 7.8 General Science textbook page 102 and note observations
  - ◇ Group B activity 7.9 General Science textbook page 103 and note observations
  - ◇ Group C activity 7.10 General Science textbook page 104 and note observations
5. Ask one student from each group to present their assigned task along with observation.
6. Conclude these activities by summarizing the key points.



### ASSESSMENT

3 MINUTES

- Ask few questions to check the students' learning:
  1. Which poles repel each other?
  2. Which poles attract each other?
  3. When same poles are brought near each other what happens?
  4. What happens when opposite poles are brought near to each other?



### CONCLUSION / SUM UP

5 MINUTES

1. Like/same poles always repel each other and unlike poles always attract each other
2. When we suspend the bar magnet freely one end moves toward the north and the other move towards the south.



### HOMEWORK / FOLLOW UP

2 MINUTES

- Ask students to complete the project Q-3 on page 110 of Grade 5 General Science textbook.

# MAGNETIC COMPASS



## STUDENT LEARNING OUTCOMES

- Describe the working of a magnetic compass
- Explain different types of magnets (permanent, temporary magnet and electromagnet)

## INFORMATION FOR TEACHERS

- Follow the given instructions before starting the lesson:
  - Read the topic in the textbook.
  - Ensure safety measures while students are performing activities in groups.
  - Plan and arrange the material needed for activities.
  - A detailed explanation of contents i.e., magnet compass and Types of magnets.
  - Following suitable methods for teaching the topic may be used.
    - Inquiry-based method
    - Activity-based method
    - Project method
    - Lecture cum demonstration

**Keywords** North, south, magnetic, compass, poles

**Skills** Observation and classification



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Writing board, charts, duster, marker/chalk, etc. needle, magnet, pencil, glass and thread.



**INTRODUCTION**

5 MINUTES

- Ask the following questions randomly from the students to reflect on the previous knowledge, write their responses one by one on the writing board.
  - What is a magnetic compass?
  - How can we find Qibla?
  - What device is used for finding direction?  
(Facilitate students while getting their responses)



**DEVELOPMENT**

20 MINUTES

- Explain the topic by using available teaching audio-visual aids and write key points on the writing board by involving the students

2. Draw the magnetic compass on the board to show the movement of the compass by pointing out the directions.
  - ◇ **Magnetic compass:** The magnetic compass is a device used to locate the direction or position of a place. Using a magnetic pointer that aligns itself with the earth's magnetic field. The magnetic compass is the oldest and the most familiar type of compass and is used in different forms in aircraft, ships and land vehicles.
  - ◇ Permanent magnets are made from special alloys (ferromagnetic *materials*) such as iron, nickel, and cobalt. Several alloys of rare-earth metals and minerals such as **lodestone** (magnetite possessing polarity. Something that strongly attracts.)
  - ◇ **Temporary magnets** are made from soft metals, and only retain their magnetism while near a permanent magnetic field or electric current. Common temporary magnets include nails and paperclips, which can be picked up or moved by a strong magnet.
3. Now divide the class into three groups by naming them A and B and C and assign:
  - ◇ Group A. Activity 7.12 General Science textbook on page 105 and note observations
  - ◇ Group B. Activity 7.13 General Science textbook on page 105 and note observations
  - ◇ Group C. Activity 7.14 General Science textbook on page 106 and note observations
4. One student from each group will present their assigned task along with observations.
5. Explain and conclude these activities by summarizing the key points from each activity.



### ASSESSMENT

3 MINUTES

To check the understanding of the students following few questions will be asked.

What device is used for finding directions?

What directions does the magnetic compass point towards?

How can you differentiate between permanent and temporary magnets?



### CONCLUSION / SUM UP

5 MINUTES

1. The magnetic compass is a device used to locate direction.
2. *Permanent magnets* are made from special alloys (ferromagnetic *materials*) such as iron, nickel and cobalt,
3. Temporary magnets are made from soft metals, and only retain their magnetism while near a permanent magnetic field or electric current.



### HOMEWORK / FOLLOW UP

2 MINUTES

- Investigation – Q.4 page 110 Grade 5 General Science textbook to be performed in class as a follow-up.

# STRUCTURE OF THE EARTH



## STUDENT LEARNING OUTCOMES

- Describe the structure of the Earth, (crust, mantle and core) and the physical characteristics of these distinct parts.

## INFORMATION FOR TEACHERS

- Follow the given instructions before the lesson:
  - Read the topic in the textbook and additional material to develop a holistic picture of the content.
  - Ensure safety measures while students are performing activities in the group.
  - Plan and arrange the material needed for activities.
  - Know the detailed explanation of the contents.
  - Use the suitable method for teaching the topic such as activity-based methods lecture cum discussion, demonstration and project methods.
  - Point out the keywords/terms in the lesson

**Keywords** Crust, mantle, core, deserts, ocean and volcano.

**Skills** Observation, classification and inferring are the skills to be emphasized.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Whiteboard, markers, duster, chalks, charts, China clay of different colours (Red + Blue + Brown) globe, plastic sheets and knives.



## INTRODUCTION

5 MINUTES

- To motivate the class and develop the interest of the learner, ask the following questions:
  - Where do you live? (Earth)
  - Where do plants grow?
  - Where do animals live?
  - Have you seen a globe?
  - What is the shape of a globe?



## DEVELOPMENT

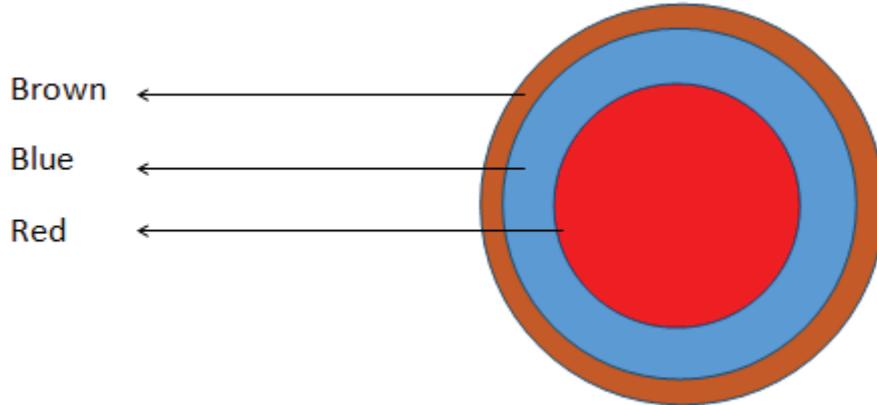
20 MINUTES

### Activity 1:

- Present three different colours of China clay or playdough in the class and ask any three

students to roll the clay.

2. Guide students in rolling the clay in the form of a ball.
3. Tell students to make:
  - ◇ First, a roll of red clay,
  - ◇ Second, a roll is of blue clay and
  - ◇ Third, a roll is of brown colour clay,
4. Roll the three clays above one another in such a manner, that they cannot stick to one another.



5. Now ask few questions:
  - ◇ What does it look like? (A ball)
  - ◇ What does it contain on the inner side?
6. Ask to cut the ball with a plastic knife and observe: Again, ask the following
  - ◇ How many colours do you observe in the ball? (Red, blue, brown)
  - ◇ What is the colour of the interior layer? (Red)
  - ◇ What is the colour of the outer layer? (blue)
7. Now explain that just like a ball the earth consists of three-layer like
  - ◇ Brown colour                    →                    Crust
  - ◇ Blue Colour                    →                    Mantle
  - ◇ Red colour                    →                    Core

Students will make charts having the following information

### Structure of Earth:

1. **Crust:**
  - ◇ The outer surface of the earth
  - ◇ We live on this part.
  - ◇ Contains mountains, deep oceans, rivers, deserts, green fields, rural and urban dwellings. The average thickness of this is 5-70 km.
2. **Mantle:**
  - ◇ Found under the crust
  - ◇ The biggest part of the earth
  - ◇ Thickness is about 3900 km
  - ◇ Contains hot fluid called lava
  - ◇ Lava comes out to the surface during volcano
3. **Core:**
  - ◇ Last layer of the earth

- ◇ Hottest part
- ◇ Temperature = 5000°C
- ◇ Core has two parts
  - Internal core
  - External core

### Activity 2:

1. Invite a student to share his/her thoughts on the structure of the earth and facilitate.
2. Conduct activity 8.1 on page 112 of General Science textbook Grade-5.

### Recapitulation:

1. How many layers are there in the earth?
2. Name the layer of earth?



### CONCLUSION / SUM UP

3 MINUTES

1. What is the name of the innermost layer of earth?
2. What is the name of the hottest layer of earth?
3. In which layer is lava found?



### ASSESSMENT

5 MINUTES

- A quick quiz to be held in class given on page 113 of the General Science textbook.



### HOMEWORK / FOLLOW UP

2 MINUTES

- Make the model of the internal structure of the earth from low-cost materials in the home and label their different layers.

# SOURCES OF WATER



## STUDENT LEARNING OUTCOMES

- Describe the sources of water on earth

## INFORMATION FOR TEACHERS

- Follow the given instructions before starting the lesson:
  - Read the topic fully in the textbook and in the additional resource material available.
  - Ensure safety measures while students are performing activities in the group
  - Plan and arrange the material needed for activities
  - Know the explanation of the contents.
  - Use the suitable method for teaching the topic such as activity-based methods lecture cum discussion, demonstration, and project methods.

**Keywords** Fresh-water, glaciers, lakes springs, underground water

**Skills** Observation and classification skills to be emphasized during the lesson



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Whiteboard, markers, duster, chalks, charts, textbook General Science Grade – 5



## INTRODUCTION

5 MINUTES

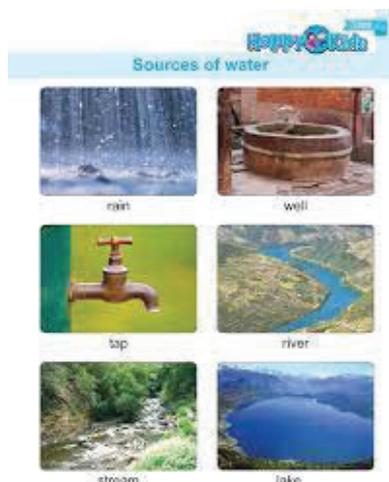
- An environment shall be generated to develop the interest among the students in a new topic.
- Show the globe and ask:
  - What does the blue color on the globe indicate?
  - Tell students that most of the earth is covered with water shown on the globe as blue colour.
- Ask students the following questions about water:
  - When you feel thirsty, what do you drink?
  - Where do we get water from?
  - Name the uses of water in our daily life. (drinking/cooking and washing)
  - What is the source of water in our homes?
- Now introduce the topic as “Sources of water”



## DEVELOPMENT

20 MINUTES

- Paste a chart on a writing board having pictures of the sources of water and take responses.



### Activity 1:

1. Divide the class into two groups.
2. Group A will write the sources of water.
3. Group B will write uses of water on the chart under the proper guidance.

### Activity 2:

1. Discuss the **Interesting Information, Points to Ponder and Quick quiz** given on page 115 of the General Science textbook.
2. Explain the **water cycle** by drawing the diagram given on page 115 of the General Science textbook.
3. Tell students to draw the water cycle in their notebooks and define the terms **evaporation, condensation, precipitation and collection**. This is how the total amount of water on earth does not change. Nature has built this cycle to maintain the water balance on earth.
4. Ask students to complete Q. 3 Part I, on page 122 of the General Science textbook in class.

### Recapitulation:

1. Why water is important?
2. Write the main sources of water.
3. What will happen if we use too much water?
4. Why ocean water is unfit for drinking?



## CONCLUSION / SUM UP

3 MINUTES

- Before concluding the lesson, the following questions will be asked.
1. Name the different sources of water in your locality?
  2. How we use water in our daily life?
  3. Name natural sources of water.
  4. Is there a natural source of water in your community?



## ASSESSMENT

5 MINUTES

- Prepare a chart and write down the names of sources of water and also mention the uses of water.



## HOMEWORK / FOLLOW UP

2 MINUTES

- Ask students to paste some pictures of sources of water in their notebooks also write down the uses of water.
- Ask students to collect the names of sources of water in school, home and surroundings.

**Month**

**7**

# TYPES OF SOIL, CHARACTERISTICS OF SOIL



## STUDENT LEARNING OUTCOMES

- Identify similarities and differences among the different types of soil
- Investigate the composition and characteristics of different soils.

## INFORMATION FOR TEACHERS

- Follow the given instructions before starting the lesson:
  - Read the topic in the textbook and in other available additional resources material.
  - Keep in view the safety measures while students are performing activities in the group
  - Plan and arrange the material needed for activities
  - Know the detailed explanation of the contents according to the level of the students
  - Use the suitable method for teaching the topic such as activity-based methods lecture cum discussion, demonstration, and project methods.

**Keywords** Clay, sand, silt, humus.

**Skills** Observation and classification skills



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- chart showing the picture of sand, silt and clay. Also bring the original samples of Sand, Silt, Humus and clay if available

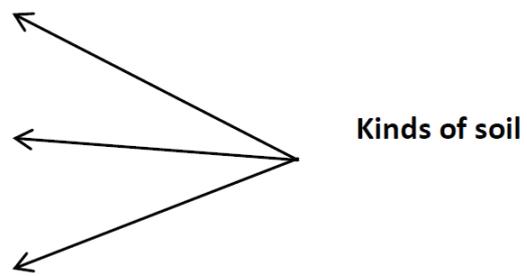
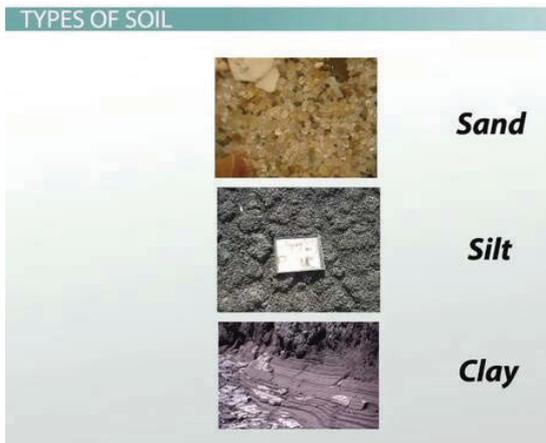


**INTRODUCTION**

5 MINUTES

- An environment shall be generated to build the interest in learning the new topic, so some questions will be asked:
  - What is soil?
  - Do you know how soil is formed?
  - What do you think that soil of different types is different in its particle size, texture and color?

Soil, air and water, are one of the most important natural resources. Most of our food grows in soil. It is the home of billions of organisms. We built homes and buildings on it. Soil is formed very slowly may be as 1cm of thickness in 500 years, so we cannot just replace them in our lifetime. However, in some areas, floods can replace the top soil almost every year.



Now introduce the topic as “Types of Soil”.



## DEVELOPMENT

20 MINUTES

1. Collect five different samples of soil from different places in a separate plastic tray and label 1, 2, 3, 4, 5.
2. Divide the class into five groups and ask them to observe and classify the soil.
3. Use the following table will be completed by taking responses from the groups.

Properties	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Colour (grey, bluish)					
Size of particles (large, small, largest)					
Weight of particles (heavy, light, lightest)					
Dry or damp					

4. Now based on information taken from the above activity, explain that:
  - ◇ If soil particles are bluish-green, smooth and silky, heavier in weight and smaller in size the soil is called silty.
  - ◇ If soil consists of bigger particles of grey colour and light in weight, water is drained through it then the soil is called sandy soil.
  - ◇ If particles are very small in size, soft, sticky and brownish in color, can take more water, very hard when dry, it is called clay.
  - ◇ Wet clay can be molded into different shapes.
5. Summarize the activity by sharing the main points.

### Activity 2:

1. Invite a student and ask him/her to tell names of different types of soil.
2. Ask students what absorption of water is?  
(Take their response and,)
3. Refer students to complete activity 8.6 and 8.7 on pages 118–119 of the General Science textbook Grade 5.
4. Sum up the activity by sharing the “Interesting Information” at page 119.

### Recapitulation:

- To recapitulate the topic, ask the following questions.
  1. Define soil?
  2. What are the types of soil?
  3. What is sandy soil?



## CONCLUSION / SUM UP

3 MINUTES

1. Now at the end of the lesson, ask some questions to assess students.
  - ◇ What is the color of clay?
  - ◇ Which type of soil absorbs water?
  - ◇ Which type of soil is used for making brick?
2. Now revise the main points of the lesson to end the day's task.



## ASSESSMENT

5 MINUTES

- Exercise Q.1 at the end of the chapter to be performed in the class.



## HOMEWORK / FOLLOW UP

2 MINUTES

- Ask students to write the answers for Q. 2 all parts are given on page 122 of the General Science textbook Grade 5.

# SPACE EXPLORATION, THE ROLE OF NASA



## STUDENT LEARNING OUTCOMES

- Define the term space and emphasize the need to explore it.
- Recognize the role of NASA (National Aeronautical and Space Administration) in space exploration.

## INFORMATION FOR TEACHERS

1. Read the whole chapter and in other relevant material available to develop a holistic picture of the content.
2. Ensure safety measures while performing the activities.
3. Plan and arrange the material needed for activities before the session.
4. Know the detailed explanation of content.
5. Use suitable method to teach the topic,
  - ◇ Activity-based
  - ◇ Project method
  - ◇ Lecture cum demonstration.

### Keywords

Heavenly bodies, spacecraft, NASA

Write the keywords/definitions on the chart and display them in the classroom, visible to all students.

### Skills

Observation and inference skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 70 MINUTES / 2 PERIODS**



**MATERIALS / RESOURCES REQUIRED**

- Pictures of moon, planets and NASA spacecraft
- Any other thing which teacher considers necessary for delivering the lesson



**INTRODUCTION**

**5 MINUTES**

- Develop an environment to build up the interest of the students and to make them eager for learning the new lesson. Ask the following questions to brainstorm the topic.
  - ◇ What is a star?
  - ◇ What is the moon?
  - ◇ Are there any other objects present in the sky at night?
  - ◇ Do you know what space is?
  - ◇ How do scientists move from the earth's surface to the moon?
- After getting the feedback from the students, announce the topic that today we will discuss "**Space Exploration**".



## DEVELOPMENT

20 MINUTES

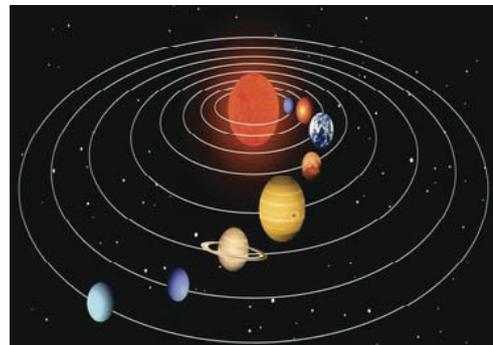
1. Start the lesson, with the help of pictures and explain the concept
  - ◇ Paste/hang the pictures in front of the students, where they can be seen clearly.
  - ◇ Identify the sun, moon, stars, and planets.
  - ◇ Moon



2. Show the picture of a NASA ship landing on the moon on page 125 of the General Science textbook grade v and elaborate on the concept.

### Guided practice

1. Ask a student to read aloud pages 124-125 of the General Science Textbook of Grade 5.
2. Explain the concept of space, its exploration and the contribution of the Soviet Union and America:
  - ◇ Define space.
  - ◇ Explain Stars and planets
  - ◇ Planets around the sun
  - ◇ Discuss Galaxies and Heavenly bodies.
  - ◇ Explain Universe and the Spacecraft.
  - ◇ Elaborate what is NASA and its work?



### ASSESSMENT

1. To recapitulate about the topic, ask the following questions during the lesson.
  - ◇ Define space?
  - ◇ Name the different heavenly bodies?
  - ◇ Why is it needed to explore these heavenly bodies?
2. Clarify if students are not cleared.



## CONCLUSION / SUM UP

3 MINUTES

1. Before concluding the lesson, ask few questions to check the students' concepts.
  - ◇ What is space?
  - ◇ What is a star?
  - ◇ What is a planet?

- ◇ Can you differentiate between the planet and star?
  - ◇ Why the space exploration is necessary?
2. Sum up the lesson by discussing the key points given at the end of the chapter with students.



### ASSESSMENT

5 MINUTES

1. Students to attempt Question No. 1 (i), (iii) on page 133 of the General Science textbook from the exercise at the end of the chapter.
2. Students to exchange copies for checking the answers in class, while you write the correct answer on the writing board.



### HOMEWORK / FOLLOW UP

2 MINUTES

- Ask students to write the answers to the following questions in their notebooks.
1. Differentiate between stars and planets.
  2. Write the names of heavenly bodies.

# ROLE OF NASA IN SPACE EXPLORATION

## Period 2 (if required)



### INTRODUCTION

5 MINUTES

Talk about the role of different organizations from all over the world who have contributed to space exploration. Background and history of space research started with the following steps. Refer to the pictures given in the textbook on page 126-127

1. The invention of the rocket made it possible to travel beyond our atmosphere into vast space.
2. The space-age began on October 4, 1957, when the Soviet Union launched Sputnik- 1 in the orbit of the earth.
3. The Soviet Union sent Sputnik 2 in Space on 3 November 1957 that carried the first living thing, a dog.
4. This was followed by other countries of the world who launched many other space crafts.
5. Uses of these space crafts are many, monitoring weather conditions, long-range radio and television transmission, precise navigation, and exploration of earth resources.
6. **National Aeronautics and Space Administration (NASA)** is an American Agency. It is responsible for space exploration and aviation.
7. As a result of its space activities, man stepped on the moon in July 1969.
8. Another big achievement of **NASA** is the establishment of the International Space Station. It is a joint project with the collaboration of Russia, Japan, Canada, and Europe.



### DEVELOPMENT

25 MINUTES

#### Activity 1:

1. Briefly describe about the international space station.
2. Ask the students to open their textbooks on page 130 and write the key features of the International Space Station in their own words.
3. Invite a student and ask him/her to share the feature with the class



### CONCLUSION / SUM UP

3 MINUTES

- Now conclude the topic by discussing the key points of the topic.



### HOMEWORK / FOLLOW UP

2 MINUTES

- Ask students to write down the role performed by NASA in space Exploration in their notebooks.

# SATELLITES



## STUDENT LEARNING OUTCOMES

- Define the term 'satellite' and describe its importance.

## INFORMATION FOR TEACHERS

- Read the whole chapter and in other relevant material to develop a holistic picture of the content.
- Ensure the safety measures while performing the activities.
- Plan and arrange the material needed for activities before the session.
- Know the detailed explanation of contents according to the level of students/learners.
- Use suitable methods to teach the topic, such as:
  - Activity-based
  - Project method
  - Lecture cum demonstration.
  - Understand the keywords

### Keywords

Satellites, Natural satellite and Moon.

Write the keywords/definitions on the chart and display them in the classroom visible to all students.

### Skills

Observation and inference are the skills to be emphasized during the lesson.



## DURATION / NO OF PERIODS: 70 MINUTES / 2 PERIODS



## MATERIALS / RESOURCES REQUIRED

- Pictures of the moon, chart showing Planets around the sun, chart showing moon around Earth and satellite
- Any other thing which teacher considers necessary for delivering the lesson.



## INTRODUCTION

5 MINUTES

- Develop an environment to build up the interest of the students and make them eager for learning of the new lesson
  - What is a satellite?
  - What is a moon?
  - Are there other moons that exist in the universe?
  - What is the importance of satellites?
- After getting feedback from the students, now announce the topic that today we are going to learn about "**Satellites**".



## DEVELOPMENT

20 MINUTES

- Start the lesson, with the help of pictures and explain the concept of the universe to the students
  - Paste/hang the pictures in front of the students, where they can be seen clearly.
  - Identify the sun, moon, stars and planets.
  - Show the picture of satellites and elaborate on the concept.

### Guided practice:

- Explain the concept of satellites and their importance.
  - Define satellites
  - Explain moon
  - Explain the moon as a satellite around the earth
  - Discuss the moon of other planets.
  - Perform activity 9.1 (Finding the number of moons of other planets) on page 128 of General Science textbook Grade 5 and elaborate the concept of satellites to the students.
  - Assist the students and perform the activity:
    - Using Cardboard, glue, thread
    - Make the model of a satellite
    - Following the instructions given on the internet link:  
[https://www.youtube.com/watch?v=S\\_rEKUruXqQ](https://www.youtube.com/watch?v=S_rEKUruXqQ)



### Assessment (Formative):

- To practice the concept of the topic, ask the following questions, during the lesson.
  - What is a satellite?
  - What is a moon?
  - Do the other planets have a moon?(Facilitate students in getting their responses).



## CONCLUSION / SUM UP

3 MINUTES

- Sum up the lesson by discussing the key points given at the end of the chapter.
- In the end, tell students that in this period, we have learned about the satellites, and we will continue this topic in the next period.



## ASSESSMENT

5 MINUTES

- Ask students to attempt Question No. 2 (ii) from the exercise at the end of chapter 9.
- Then ask students to exchange copies to verify the answers in class.
- Write the correct answer(s) on the writing board.



## HOMEWORK / FOLLOW UP

2 MINUTES

- Read pages 127 and 128 from the General Science textbook Grade 5, about satellite and

answer the following questions:

- ◇ Define and describe satellites.
- ◇ How many moons do other planets have?
- ◇ Make a table as given on page 128 General Science textbook Grade 5.

# SATELLITES



## INTRODUCTION

25 MINUTES

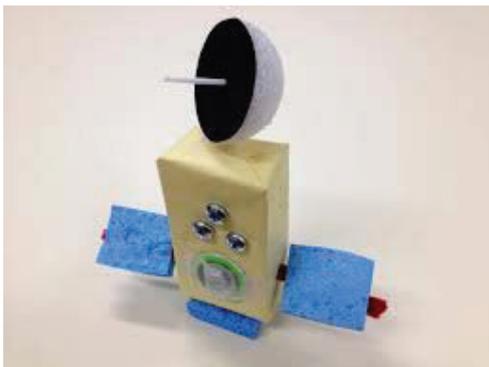
- Recall with students that in the last period they have learned about the satellites, and today we will discuss the importance of the satellites.

### Follow up:

This will be a practical class where the students will learn **Interesting Information and Do You Know** from the book given on pages 128 and 129 of the General Science Textbook and perform the following project of making a satellite from low-cost material.

### Project:

- Provide the necessary guidance for making the satellite from no-cost/low-cost material such as biscuit cases, disposable ice cream cups, and assign the activity to students
- Show the picture to the students and instruct them to make the following type of model.



- Help the students in providing information from the internet on the **Q. 5 Project** on page 134 of the General Science textbook.



## HOMEWORK / FOLLOW UP

5 MINUTES

- Names of the first five astronauts who visited the space
- Which country did they belong to?
- What were the dates of their mission?
- How long did they stay in space?



## CONCLUSION / SUM UP

5 MINUTES

- Sum up the class by asking students questions about the work done on the project.

# NATURAL AND ARTIFICIAL SATELLITES



## STUDENT LEARNING OUTCOMES

- Describe the natural satellites of the planets of the solar system.
- Define artificial satellites and explain their importance in exploring the Earth and Space.

## INFORMATION FOR TEACHERS

1. Read the whole chapter and in other relevant material to develop a holistic picture of the content.
2. Ensure the safety measures while performing the activities.
3. Plan and arrange the material needed for activities before the session.
4. Know the detailed explanation of contents according to the level of students/learners.
5. Use suitable methods to teach the topic, such as:
  - ◇ Activity-based
  - ◇ Project method
  - ◇ Lecture cum demonstration.
  - ◇ Understand the keywords

### Keywords

Satellites (recapitulation), natural satellites, artificial satellites

Write the keywords/definitions on a chart and display them in the classroom visible to all students.

### Skills

Observation and inference are the skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

Pictures of natural satellites and artificial satellites and any other thing which considered necessary for delivering the lesson.



**INTRODUCTION**

**5 MINUTES**

1. Develop an environment to build up the interest of the students and make them eager for learning the new lesson. Ask the following questions to brainstorm the topic.
  - ◇ What is a satellite? (recapitulation)
  - ◇ Do you know any natural satellite?
  - ◇ Are there any artificial (man-made) satellites also?
  - ◇ Do you think that artificial satellites are important for exploring the earth and space?
2. After getting the feedback from the students, announce the topic "**Natural and Artificial Satellites**".



## DEVELOPMENT

20 MINUTES

- Start the lesson with the help of pictures and other relevant material to explain the concept,
  - ◇ Paste/hang the pictures in front of the students, where they can be seen clearly.
  - ◇ Explain the natural satellites
  - ◇ Discuss artificial satellites
  - ◇ Show the picture of natural and artificial satellites and elaborate on the concept.
  - ◇ If possible, a video on satellites would help clear the concept for the students.

### Guided practice:

1. Explain the concept of satellites and their importance:
  - ◇ Explain natural satellites.
  - ◇ Discuss that moon is the natural satellite of the earth.
  - ◇ Discuss the natural satellites of the planets of the solar system.
  - ◇ Explain the artificial satellites.
  - ◇ Discuss the importance of artificial satellites in exploring the earth and space.

### Activity 1:

1. Ask students, “what is an astronaut?” and take responses.
2. Now, address Question 3 from the ‘**Constructed Response Questions**’ given on page 133 of the General Science textbook Grade 5.
3. Encourage students to give their answers.
4. Support where necessary for further clarity.

### ASSESSMENT

1. Check the concept of students, by asking the following questions, during the lesson.
  - ◇ Define satellite?
  - ◇ What are the natural satellites of the planets of the solar system?
  - ◇ Are satellites important for us?
2. After asking the above questions the topic will be hopefully cleared to the students.
3. Give further elaboration if any ambiguity exists among students.



## CONCLUSION / SUM UP

3 MINUTES

- Sum up the lesson by discussing the key points given at the end of the chapter with students.



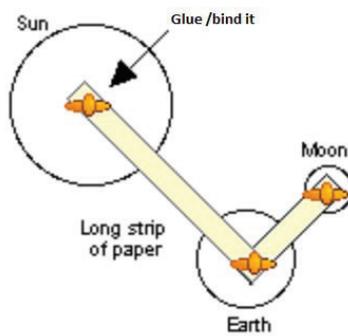
## ASSESSMENT

5 MINUTES

1. Ask students to attempt Question No. 1 (v), Question No. 2(i), on page 133 of the General Science textbook from exercise at the end of the chapter.
2. Ask students to exchange copies for checking the answers in class.
3. Write the correct answers on the writing board.

**Activity:**

- Assign the activity to make the model of earth's natural satellite (moon), earth, and sun as shown below.
1. Provide the necessary instruction/ guidance for making the earth natural satellite from no-cost/low-cost material such as disposable plates, greeting cards, cups, etc., and assign the activity to students.
  2. Show the picture to the students and instruct them to make this type of model as homework.



# USES OF VARIOUS SATELLITES



## STUDENT LEARNING OUTCOMES

- Recognize the key milestones in space technology.
- Describe the uses of various satellites in space i.e., geostationary, weather communication and global positioning system (GPS)

## INFORMATION FOR TEACHERS

1. Read the whole chapter to develop a holistic picture of the content.
2. Use extra period if the lesson is not completing in one period.
3. Keep in view the safety measures while performing the activities.
4. Plan and arrange the material needed for activities before starting the lesson.
5. Know the detailed explanation of contents.
6. Use suitable methods to teach the topic, such as
  - ◇ Activity-based
  - ◇ Project method
  - ◇ Lecture cum demonstration
  - ◇ Understand the keywords/definitions,

### Keywords

Space technology, geostationary satellite, weather satellite, a communication satellite, global positioning system satellite (GPS)

Write the keywords/definitions on the chart and display them in the classroom, visible to all students.

### Skills

Observation and inference skills to be emphasized during the lesson among students.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Pictures of a geostationary satellite, weather satellite, communication satellite, and global positioning system (GPS).
- Satellites any other thing which teacher considers necessary for delivering the lesson.



## INTRODUCTION

5 MINUTES

1. Develop an environment to build up the interest of the students and make them eager for learning the new lesson.
2. Ask the following questions.
  - ◇ What is space technology?
  - ◇ What is the weather forecast? And how is it shared?

- ◇ How do we communicate with one another from long distances?
  - ◇ Can we find the location of an object or person on earth? How is it possible?
3. After getting the feedback from the students, now announce the topic that today we will discuss “**Uses of various Satellites**”.



## DEVELOPMENT

25 MINUTES

- Start the lesson, with the help of pictures and explain the concepts given below.
  - ◇ Paste/hang the pictures in front of the students, where they can be seen clearly.
  - ◇ Identify the sun, moon, stars, and planets.
  - ◇ Show the picture of satellites and elaborate on the concept of natural and artificial satellites.

### Activity 1:

1. Inquire about the artificial satellite from a few students.
2. Then, further explain and discuss the concept of artificial satellites, and their importance.
3. Ask students to read page 129 of the General Science textbook about “Importance of Artificial Satellites”.
4. Write down its benefits on their notebooks.
5. Randomly check 2/3 notebooks.

### Activity 2:

1. Explain the uses of artificial satellites.
2. Divide the class into four groups.
3. Give one use of satellite to each group to comprehend given on pages 127-129 of the General Science textbook.
4. Ask groups to list its key features.
5. Each group will present their work to the class on the following points.
  - ◇ Define geostationary satellites.
  - ◇ Explain the concept of a weather information system.
  - ◇ Discuss and explain the communication satellites.
  - ◇ Elaborate on the concept of a global positioning system (GPS).
6. Provide the necessary instructions and assign the activity to students.
  - ◇ Listen to the information about the weather forecast on any TV channel.
  - ◇ Write down the weather forecast of Northern Areas in your notebook.

### Activity 3:

1. Find the location of the school on the Global positioning system if possible (using the android phone location app)
2. Show the students some nearby locations
3. Elaborate on the concept of the global positioning system. When your phone tells you where you are, it listens to signals from satellites high up in space. These satellites used for GPS are orbiting above the Earth and it helps devices like computers/phones, figure out how far away you are from some of them. This helps it compute your location on the map.

### Assessment (Formative)

- To check the concept of students, ask the following questions, during the lesson.
  - ◇ What are the various milestones in space technology?

- ◇ Define geostationary satellites?
- ◇ What is a weather information satellite?
- ◇ Can you name the satellite by which we communicate with one another?
- ◇ What is a global positioning system (GPS)?



### CONCLUSION / SUM UP

3 MINUTES

- Summarize the lesson with key points given at the end of the chapter on page 131 of the General Science textbook Grade 5.



### HOMEWORK / FOLLOW UP

2 MINUTES

- Provide any two of the following homework.
1. Provide the necessary instructions and assign the activity to students.
    - ◇ Listen to the information about the weather forecast on any TV channel.
    - ◇ Write down the weather forecast of Northern Areas in your notebook.
  2. Ask students to draw the table of **Key Milestones of Space Technology** from page 131 given in their General Science textbook on their notebooks.
  3. Ask students to attempt Question No. 1(iv) and Question No. 2(iii) on page 133 from the exercise at the end of the chapter.
    - ◇ Ask students to exchange copies for checking the answers in class, while they write the correct answers on the writing board.

# TECHNICAL MODEL MAKING



## STUDENT LEARNING OUTCOMES

- Enlist and practice safety procedures while carrying out the activities.

## INFORMATION FOR TEACHERS

- Read the whole chapter to develop a holistic picture of the content.
- Ensure safety measures while performing the activities.
- Plan and arrange the material needed for activities before the session.
- Know the detailed explanation of contents.
- Use suitable method to teach the topic such as:
  - Activity-based method
  - Project method
  - Lecture cum demonstration method
- Understand the keywords/definitions such as,

### Keywords

Safety measures, workplace, sharp tools

Write the definitions/meanings of the key terms on the chart and display them in the classroom, visible to all students.

### Skills

Observation, analysing, and inference is the skills to be emphasized.



## DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD

35 min/1 period



## MATERIALS / RESOURCES REQUIRED

- Pictures (images) / charts (prewritten charts of laboratory rules), Images of laboratory safety,
- Any other thing which teacher considers necessary for delivering the lesson.



## INTRODUCTION

5 MINUTES

- Before the introduction of the topic, generate an environment to develop the interest of the students.
- Make them eager to learn the new topic by asking the following questions:
  - What is safety?
  - What are safety rules?
  - Why we follow the safety procedure?
- After getting the feedback from the students, now announce the topic that today we will discuss "**Safety Measures**".



## DEVELOPMENT

20 MINUTES

1. Start the class with a discussion on safety measures we take in our daily life for example, while crossing the road we look on both sides, we make sure all gas connections are closed and secure when not in use.
2. Describe the importance of safety measures while doing any kind of practical work with tools and instruments.
3. Advise students to take maximum safety measures in their routine life matters.

### Guided practice:

1. Explain the concept of safety and its importance by:
  - ◇ Defining safety.
  - ◇ Explaining the concept of safety measures.
  - ◇ Discussing the principle while working in the laboratory.
2. Start the lesson, with the help of pictures given at the end this lesson and explain the concepts/terms.

### Activity:

1. Write down the safety measures on charts and display them in the corners of the classroom.
2. Ask students to move to the corners of the classroom in small groups.
3. Look into these safety measures.
4. Randomly ask the students to tell one of these measures and explain it to the remaining students.



## ASSESSMENT

5 MINUTES

- Randomly ask the following questions to check the learning of the students:
  - ◇ What is the need for safety measures?
  - ◇ Why is it required to remove the unnecessary objects?
  - ◇ Name any two sharp tools.
  - ◇ How can we avoid the risks in the laboratory?
  - ◇ What should be done? (In case of mishap).



## CONCLUSION / SUM UP

3 MINUTES

- Sum up the lesson by discussing the key points with students on safety measures given on page 136 of the General Science textbook Grade-5.



## HOMEWORK / FOLLOW UP

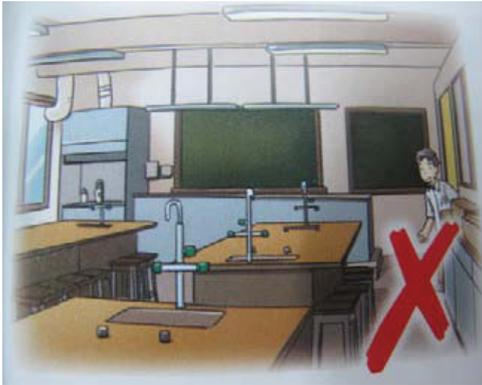
2 MINUTES

- Make a list of safety measures while working in the kitchen, crossing the road, and while riding a bicycle.

## Safety Measures



Follow instructions given by your teacher.



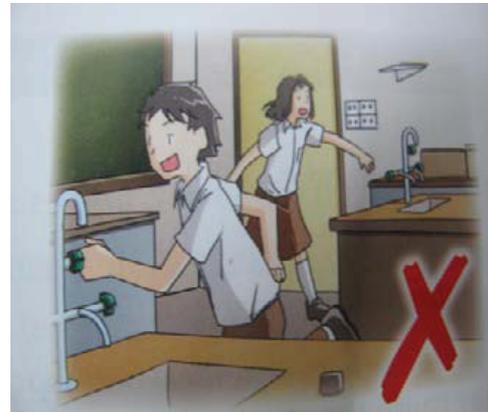
Do not enter the laboratory without your teacher's permission.



Report all accidents to your teacher at once.



Tie up long hair and school ties.



Do not run or play in the laboratory.



Do not eat or drink in the laboratory.



Do not touch the electricity operated tools

**Month**

**8**

# TECHNICAL MODEL MAKING



## STUDENT LEARNING OUTCOMES

- Making a model of footbridge and bookshelf.

## INFORMATION FOR TEACHERS

1. Read the whole chapter to develop a holistic picture of the content.
2. Ensure safety measures while performing the activities.
3. Plan and arrange the material needed for activities before the session.
4. Know the detailed explanation of contents.
5. Use suitable method to teach the topic:
  - ◇ Activity-based method
  - ◇ Project method
  - ◇ Lecture cum demonstration method
6. Understand the keywords/definitions such as,

**Keywords** Model making, papercraft, Skewers

**Skills** Observation, designing experiments, and measuring skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Writing board, chart, Ice cream sticks, Cardboard/greeting cards, Glue, thread, scissor/ paper cutter.



**INTRODUCTION**

5 MINUTES

- Before the introduction of the topic, generate an environment to develop the interest of the students and make them eager to learn the new topic by asking the following questions.
  - ◇ Do you know the uses of paper? (writing)
  - ◇ Besides writing for what other purpose we use paper?



**DEVELOPMENT**

20 MINUTES

Start the lesson by reviewing the basic terms for making models, cutting and pasting

### Guided practice:

1. Explain the concept of papercraft and objects made from it.



2. Ask students what is a skewer? Take responses and define skewers.



3. Discuss the concept of model making by asking students, "have they ever made any model?"
4. Ask them to read page 137 of the textbook at home to learn further about model making.
5. Explain the footbridge.



6. Sum up the activity by taking questions from students.

### Activity 1:

1. Introduce activity 10.1 on page 137 of the General Science textbook.
2. Explain the process of joining using the thread, and glue.
3. After performing activity 10.1 on page no. 137 of General Science textbook ask some questions to further enhance the concept of students
  - ◇ What is a skewer?
  - ◇ What is joining?
4. Sum up the activity by telling students that we can make so many small items using the method we have just learned.

### Activity 2:

1. To give practice for cutting and joining introduce cutting of paper and cardboard through activity 10.2 on page 138 of the General Science textbook Grade 5.
2. Now divide the class into four groups and names them A, B, C, and D.
3. Assign the following tasks to groups:
  - ◇ Group – A & C: Assign the making footbridge with help of cardboard, ice-cream sticks.
  - ◇ Group – B & D: Assign the making of bookshelf with the help of cardboard.
4. Ask students to follow cutting and joining concepts to complete your task.
5. During the assigned task take a round of the class and help students complete their tasks.



## CONCLUSION / SUM UP

3 MINUTES

- Conclude the lesson by sharing the relevant key points mentioned on page 145 of the General Science textbook.



## ASSESSMENT

5 MINUTES

1. Exercise Question No. 2 (i) and Question No. 3 (i) on page 146 of General Science textbook grade-5 to be done in class.
2. Tell them to exchange copies for checking answers in class.
3. Write the correct answers on the writing board.



## HOMEWORK / FOLLOW UP

2 MINUTES

- Ask students to use low-cost materials like greeting cards/cardboards and make the model of bookshelf for homework.

# TECHNICAL MODEL MAKING



## STUDENT LEARNING OUTCOMES

- Use spirit level/water level to compare the level of different objects (table, picture and frame).
- Use a plumb bob to install a flag pole vertically.

## INFORMATION FOR TEACHERS

1. Read the whole chapter to develop a holistic picture of the content.
2. Ensure safety measures while performing the activities.
3. Plan and arrange the material needed for activities before the session.
4. Know the detailed explanation of contents.
5. Use suitable method to teach the topic:
  - ◊ Activity-based method
  - ◊ Project method
  - ◊ Lecture cum demonstration method
6. Understand the keywords/definitions such as,

### Keywords

Spirit level, Planer, Bubbled tube, Plumb bob

- Check if students are familiar with these things/objects.
- Practical examples of spirit level used to give in the textbook should be handy.

### Skills

Observation, designing an experiment, and measuring skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



## MATERIALS / RESOURCES REQUIRED

- Writing board, chart, Spirit level, Table, picture, frame and Plumb bob



## INTRODUCTION

3 MINUTES

1. Before the introduction of the topic, generate an environment to develop the interest of the students.
2. Make them eager to learn the new topic by asking the following questions:
  - ◊ What do you know about leveling?
  - ◊ Why it is necessary to level the objects?
  - ◊ How can we level the different objects?
  - ◊ How can we use a plumb bob to make an object vertical?
3. After discussing these questions, announce the topic as **“learn more about leveling, use of spirit level and plumb bob”**.



## DEVELOPMENT

20 MINUTES

- Ask about the word “level” and take a response from
  1. Discuss and explain the spirit level.
  2. Explain how to use the spirit level and make objects such as a table frame, and picture level with it.
  3. Discuss and explain the plumb bob and its use for checking the walls, pillars, and rods (such as flag poles) as they are vertical or not.
  4. Use the spirit level and perform activity 10.3 on page 137 of the General Science textbook to further explain the leveling.
  5. After a practical demonstration of leveling, ask some questions
    - ◇ What is leveling?
    - ◇ What are the main uses of the spirit level?
    - ◇ Can you level an object with spirit level?



### Activity 1:

1. Make pairs of the students.
2. Ask pairs to perform the activity 10.4 on page 138 of the General Science textbook.
3. Observe the students while they perform the activity.
4. Provide help and guidance where they need it.

### Recapitulation:

- Ask the following questions to check the understanding of the students:
  - ◇ What is spirit level?
  - ◇ Where is the spirit level used?
  - ◇ Give an example from daily life in which plumb bob is used.



## CONCLUSION / SUM UP

4 MINUTES

- Conclude the lesson “leveling” with the help of the following questions:
  - ◇ Differentiate between a level surface and a non-level surface.
  - ◇ Do you think that making the wall vertical is compulsory or not?



## ASSESSMENT

5 MINUTES

1. Exercise Question 1 (i) and (ii), Question 2 (ii) and (iv) on pages 146-147 of General Science textbook grade-5 to be done in class.
2. Students to exchange copies for checking answers in class.
3. While you can continue to write the correct answers on the writing board.



## HOMEWORK / FOLLOW UP

3 MINUTES

- Assign the activity to make the spirit level and plumb bob using low-cost material.

# ASSEMBLING TECHNICAL DEVICES



## STUDENT LEARNING OUTCOMES

- Prepare LED light strings working with a 12-volt battery.

## INFORMATION FOR TEACHERS

- Read the whole chapter to develop a holistic picture of the content.
- Ensure safety measures while performing the activities.
- Plan and arrange the material needed for activities before the session.
- Know the detailed explanation of contents.
- Use suitable methods to teach the topic, such as
  - Activity-based method
  - Project method
  - Lecture cum demonstration method
- Checkout if students are familiar with the LED and use of LED lights.
- Practical examples of LED light strings use given in the book should be handy.
- Discuss the use of the LED light strings.
- Understand the keywords/definitions.

**Keywords** LED, 12-volt Positive (+) terminal, Negative (-) terminal Battery

**Skills** Observation, designing an experiment, and measuring skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Writing board, chart, LED lights, 12-volt battery, cardboard, steel nails, connecting wires, cutter, paper cutter and pliers.



**INTRODUCTION**

6 MINUTES

- Before the introduction of the topic, generate an environment to develop the interest of the students and make them eager to learn the new topic, ask the following questions.
  - What is LED light?
  - What do you know about 12 volts?



**DEVELOPMENT**

17 MINUTES

- Ask about the LED and take a response from the students.

1. Define the LED light –(Light-Emitting Diode).



2. Discuss and explain the use of LED lights



### Activity:

- Use the LED lights and perform activity 10.5 on page 140 of General Science textbook grade-5 to further explain the preparation of LED light strings.
- After a practical demonstration of LED light strings, ask some questions like:
  - ◊ Have you seen the LED lights in your surroundings?
  - ◊ What is the use of LED lights?

### Recapitulation: 5 Minutes

- To check the understanding of the students and ask a few questions:
  1. What is LED?
  2. Where are the LED lights used?
  3. Give an example from your daily life in which you have seen the use of LED light?



### CONCLUSION / SUM UP

5 MINUTES

- Conclude the lesson with the help of some questions:
  1. Differentiate between LED light and ordinary light (bulb).
  2. Do you think that making use of LED is good for us?
  3. How can we save electricity?



### ASSESSMENT

5 MINUTES

1. Exercise Question 2 (iii) and Question 3 (iii) on page 147 of the General Science textbook Grade 5 to be performed in class.
2. Students to exchange copies for checking answers in class.
3. Write the correct answers on the writing board.



### HOMEWORK / FOLLOW UP

2 MINUTES

- Ask students to complete exercise Question 4 “Investigate” on page 146 of the General Science textbook “How will you make a decorating light”? at home.

# ASSEMBLING TECHNICAL DEVICES



## STUDENT LEARNING OUTCOMES

- Make a musical instrument from easily available resources.
- Make moveable van, bus and trolley.

## INFORMATION FOR TEACHERS

1. Read the whole chapter to develop a holistic picture of the content.
2. Take responses from the students and ask about the papercraft and the different objects made from it. Maybe they have enough information about it. If it is so it will be very handy for teaching the topic.
3. Ensure safety measures while performing the activities.
4. Plan and arrange the material needed for activities before the session.
5. Know the detailed explanation of contents.
6. Use suitable methods to teach the topic.
  - ◊ Activity-based method
  - ◊ Project method
  - ◊ Lecture cum demonstration method
7. Understand the keywords/definitions.

**Keywords** Papercrafts, Musical instruments, Moveable van, bus and trolley.

**Skills** Observation, designing experiment and classification skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

Writing board, chart, cardboard/greeting cards, glue, thread, scissor, cutter, rubber bands, wooden sticks, packing tape, colored paper.



**INTRODUCTION**

**5 MINUTES**

- Before the introduction of the topic, build up an environment to develop the interest of the students and to make them eager to learn the new topic, ask the following questions.
  - ◊ What is cardboard?
  - ◊ List the objects which are formed from cardboard.

### Activity 1:

1. Ask students to perform activity 10.7 on page 141 of the General Science textbook Grade 5.
2. Explain the making movable wagon.

3. After performing the activity, ask the students:
  - ◇ What are the uses of cardboard/ greeting cards?
  - ◇ Can we make playing objects from cardboard?
4. Sum up the activity by motivating students to use low-cost/ household leftover material to make such models.



## DEVELOPMENT

22 MINUTES

1. Discuss and explain making different objects from cardboard, and empty boxes.
2. The papercraft and objects made from it are given below.



### Activity 2:

1. Make pairs of the students and perform activity 10.8 on page 141 of the General Science textbook.
2. Observe the students while they perform the activity.
3. Provide help and guidance where they need it.



## CONCLUSION / SUM UP

8 MINUTES

- Today we have performed the activity of making the musical instrument and movable van from low-cost materials such as cardboard/ greeting cards.
- Ask one/two students to tell the steps involved in making a movable van.



## ASSESSMENT

5 MINUTES

1. Since this is practical work the students' performance will be seen in the products, they have prepared.
2. Evaluate students on the homework and the craftwork they performed in the class.



## HOMEWORK / FOLLOW UP

- Provide the necessary instruction and assign the following activity to students
- Assign activity 10.8 to students as homework on page 142 of the General Science textbook.

# FIRST AID AND DISASTER MANAGEMENT



## STUDENT LEARNING OUTCOMES

- Use first aid box to dress a wound.
- Practice shifting a person to hospital.

## INFORMATION FOR TEACHERS

1. Read the whole chapter to develop a holistic picture of the content.
2. Ensure safety measures while performing the activities.
3. Plan and arrange the material needed for activities before the session.
4. Know the detailed explanation of contents.
5. Use suitable methods to teach the topic such as;
  - ◇ Activity-based method
  - ◇ Project method
  - ◇ Lecture cum demonstration method
6. Understand the keywords/definitions

### Keywords

First aid, First aid box, and its items, Disaster management, Earthquake, fire, and flood.

- ◇ Write the keywords/definitions on a chart and display them in the classroom visible to all students.
- ◇ Checkout if students are familiar with them

### Skills

Observation, designing experiment and inferences skills to be emphasized during the lesson.



**DURATION / NO OF PERIODS: 70 MINUTES / 2 PERIODS**



## MATERIALS / RESOURCES REQUIRED

- Bandages, Pyodine, Gauzes. Any other thing which teacher considers necessary for delivering the lesson



## INTRODUCTION

5 MINUTES

1. Before the introduction of the topic, build up an environment to develop the interest of the students.
2. Make them eager to learn the new topic by asking the following questions:
  - ◇ Have you ever get injured? If so, how were you treated immediately?
    - Tell students that sudden treatment is called 'first aid'
  - ◇ What should you do after providing the first aid if the person is badly injured?

3. After getting the feedback from the students, announce the topic that today we will learn about **"First aid and Disaster Management"**.



## DEVELOPMENT

23 MINUTES

- Start the lesson and perform the activities and drill to explain the concepts.
- Place the first aid box in front of the students, where it can be seen clearly. Let the students get familiar with the items present in the First Aid box.

### Activity I:

1. Tell students that when somebody gets injured, he/she immediately requires to stop bleeding.
2. Make pairs of the students.
3. Ask pairs to perform 'Dressing a Wound' activity 10.9 on page 142 of the General Science textbook.
4. Provide necessary first aid things to the pairs.



5. Move around the class, observe, and support students.



## CONCLUSION / SUM UP

2 MINUTES

1. Summarize the topic by reviewing the key points of the topic.
2. In the end, tell students we will learn further concepts of First Aid in the next period.



## ASSESSMENT

5 MINUTES

1. To check the understanding of students about first Aid, Ask the following questions.
  - ◇ What is First Aid?
  - ◇ Name the items present in the First Aid box.
  - ◇ What is the purpose of the First Aid box?



## HOMEWORK / FOLLOW UP

- Ask students to write down the steps involved while applying first aid to an injured person.

# FIRST AID AND DISASTER MANAGEMENT



## INTRODUCTION

5 MINUTES

1. Tell students that in previous periods we have discussed First Aid for injury. In this period, we will discuss and perform role-play of disaster management.



## DEVELOPMENT

25 MINUTES

1. Perform the role-play for teaching the topic on page 143 of the General Science textbook.
2. Select student to act as:
  - ◇ An injured person,
  - ◇ helpers to shift the injured person to a safe place,
  - ◇ helpers to provide the first aid,
  - ◇ helper to call an ambulance
  - ◇ helpers for shifting to stretcher/calling the relatives
  - ◇ helpers for shifting to hospital
3. Perform the role-play in the following steps.

### Step 1:

- ◇ Stop panic.
- ◇ Shifting an injured person to a safer place



### Step 2:

- ◇ Check the injured person carefully, in case of bleeding/ fractures, etc. provide the necessary help in the form of first aid.
- ◇ Apply bandage/cloth to reduce/stop bleeding.
- ◇ In case of fracture of leg/arm tie it with some hard support such as wood/rod etc.

### Step 3:

- ◇ Call the Rescue team at 1122.
- ◇ Provide information about the exact location and nearby hospital.



### Step 4:

- ◇ Shift the injured person to the ambulance.



### Step 5:

- ◇ Inform the relative of the injured person.
- ◇ Provide information about the nature of the injury and shifting hospital.

## ASSESSMENT

1. Check the concept of students by asking questions during the lesson.
  - ◇ What is first aid?
  - ◇ Why first aid is necessary?
  - ◇ What should we do after providing the first aid?



### CONCLUSION / SUM UP

3 MINUTES

1. Before concluding, the lesson ask few questions to check the students learning.
  - ◇ How is the first aid provided?
  - ◇ How wound is bandaged?
  - ◇ What should you do after providing the first aid?
  - ◇ How we can call the emergency ambulance?
2. Sum up the lesson by discussing the key points given at the end of the chapter with students.



### ASSESSMENT

5 MINUTES

1. Students to attempt Question 1 (iii), Q2 (v) from exercise on pages 146-147 of the General Science textbook.
2. Ask students to exchange copies for checking the answers in class.
3. Share the correct answers for further clarity.



### HOMEWORK / FOLLOW UP

2 MINUTES

- Provide the necessary instructions and assign the activity to students:
1. Assign the activity to students to collect the pictures of nearby hospitals and paste them into their notebooks.
  2. Find the contact number of your nearest hospital for emergency and write in the inner title page of your notebooks.

# FIRST AID AND DISASTER MANAGEMENT



## STUDENT LEARNING OUTCOMES

- Practice earthquake, fire and flood drill.

## INFORMATION FOR TEACHERS

1. Read the whole chapter to develop a holistic picture of the content.
2. Ensure safety measures while performing the activities.
3. Plan and arrange the material needed for activities before the session.
4. Know the detailed explanation of the contents.
5. Use suitable methods to teach the topic such as:
  - ◇ Activity-based method
  - ◇ Project method
  - ◇ Lecture cum demonstration method

### Keywords

Earthquake drill, fire drill, flood drill.

Write the keywords/definitions on a chart and display them in the classroom visible to all students.

### Skills

Observation, designing an experiment, and inference skills to be emphasized during the Lesson.



**DURATION / NO OF PERIODS: 35 MINUTES / 1 PERIOD**



**MATERIALS / RESOURCES REQUIRED**

- Plastic disposable bottles, binding thread, pictures of charts (prewritten instructions if any)
- Any other thing which teacher considers necessary for delivering the lesson



**INTRODUCTION**

**5 MINUTES**

- Before the introduction of the topic, generate an environment to develop the interest of the students and make them eager to learn the new topic, ask the following questions.
  - ◇ Whenever there is an earthquake what should you do immediately?
  - ◇ How can we make ourselves safe from fire?
  - ◇ Do you know what is flood?
- After getting the feedback from the students announce the topic that today we will discuss **“First Aid and Disaster Management”**.



1. Start the lesson by performing the role play /drills to explain the concept of earthquake, flood, and fire.
2. Perform the role play for teaching the topic earthquake/flood/ fire drill on page 144 of the General Science textbook.

**Activity 1: Perform the Earthquake Activity****Roleplay:**

- ◇ Select the student to act as a leader
- ◇ Provide instruction to students that when the leader blows the whistle, perform the role play in the following steps.

**Step 1: (in Classroom)**

- ◇ (Whistle blows) Stop panic.
- ◇ You should go down below the table.

**Step 2: (in Classroom)**

- ◇ (Whistle blows) Stop panic.
- ◇ Take cover below the strong support like door frame etc.

**Step 3: (in the lawn, open area)**

- ◇ (Whistle blows) Stop panic.
- ◇ Put your both hands on your head and sit down (do not move around)



- ◇ Also, show them the different postures as shown on page 145 of the General Science textbook Grade-5.

**Activity 2: Perform the Fire Activity****1. Roleplay**

- ◇ Take the students to an open place
- ◇ Select one student to act as a leader
- ◇ Provide instruction to students that when the leader blows the whistle then perform the role play in the following steps.

**Step 1:**

- ◇ (Whistle blows) Stop, don't panic.
- ◇ Stop and You should go down cover your face with your hands.

**Step 2:**

- ◇ (Whistle blows) Stop, don't panic.



- ◇ Stop and You should go down, roll, and cover your face with your hands.

### Activity 3:

1. Use disposable plastic bottles to form the life jacket.
  - ◇ Make two sets of bottles, by tying three bottles close to each other
  - ◇ Tie one set of bottles in front of the student
  - ◇ Tie the other set of bottles at the back of the student
  - ◇ Give these bottles the shape of the life jacket.
  - ◇ Shift the children's/ old age persons and expensive items to a safer place
2. It will be helpful if the rescue 1122 experts are available for training sessions and perform the drills in front of the students.



### ASSESSMENT

5 MINUTES

1. To check the concept of students, ask the following questions during the lesson.
  - ◇ What is an earthquake?
  - ◇ What is a flood?
  - ◇ What should be done during the fire?



### CONCLUSION / SUM UP

5 MINUTES

1. Before concluding the lesson, ask few questions to conclude the lesson.
  - ◇ How to make ourselves safe in an earthquake?
  - ◇ What should we do on seeing or smelling fire?
  - ◇ How to reduce the damages in floods?  
(Facilitate students while getting responses from them)
2. Sum up the lesson by discussing the key points given at the end of the chapter with the students.



### HOMEWORK / FOLLOW UP

- Assign the activity to students to collect the pictures of earthquake, fire, and flood drills and paste them into their notebooks.



# قومی ترانہ

پاک سرزمین شاد باد کشور حسین شاد باد  
تو نشان عزم عالی شان ارض پاکستان!  
مرکز یقین شاد باد

پاک سرزمین کا نظام قوت اخوت عوام  
قوم، ملک، سلطنت پائندہ تابندہ باد  
شاد باد منزل مراد

پرچم ستارہ و ہلال رہبر ترقی و کمال  
ترجمان ماضی شانِ حال جان استقبال!  
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