

**Voyager** TEACHER  
MANUAL

# Voyager

**GENERAL SCIENCE  
GRADE 5**

**TEACHER MANUAL**

THE **HONEYCOMB**  
SERIES

  
**GREYCAPS**  
LEADING A LEARNING REVOLUTION

# Welcome

*WELCOME DEAR TEACHER,*

*It is always wonderful to interact with teachers who are directly connected to the development of children in various field of study, in their school life.*

*General Science is a subject which gives a peek into the world we live in, to a child. Its interactive storytelling and amusing characters give life to the topics and at the same time, enhance the learning process.*

*We, at Greycaps, appreciate the time and effort you are giving to this series and are being a part of a future in interactive learning.*

*P.ick B. Lin*

# Voyager

## What's in it?

How will  
this manual  
help?

*This manual is designed to help you, the teacher, to understand:*

- 1. The objective & offerings of the book*
- 2. The content structure and format*
- 3. Teacher inputs that enhance the student experience month-on-month*
- 4. The benefits to the teacher and student*
- 5. Answers to various exercises*
- 6. The measurable take away*

Honeycomb series

About Voyager

Meet Buzz and Rocky

Structure & Framework

Features

Objectives of Voyager 5

Chapter summaries (incl. exercise answers)

Evaluation

Benefits

The sections  
you will find...

# Honeycomb Series

We, at Greycaps, are proud to present a textbook series with a difference which enhances the teaching and learning experience.

## The Philosophy

The honeybee is an intriguing creature in the animal kingdom. Its characteristics reflect being adaptable, agile, well-organised, creating synergy and working in harmony. It's sole purpose is to create the honeycomb and strive for perfection in creating each hexagonal cell in the honeycomb. The queen bee gathers the efforts of all the honeybees and motivates them to strive for perfection.

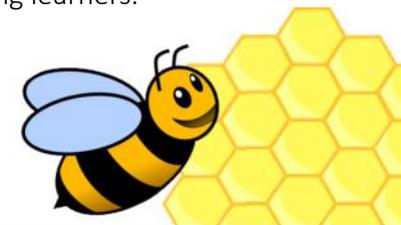
We believe that this life skill can be borrowed from nature and applied into the school classroom.



Every teacher is like the **queen bee** – focussing on students' different capabilities and striving to attain harmony within the classroom.

Each student is like a **honeybee** – focussing on better learning and perfection.

This novel philosophy, initiated by Greycaps, is the cornerstone by which we create engaging material for our young learners.



# Honeycomb Series

## OBJECTIVES

### CO-EXISTENCE IS THE KEY

Learning is a collective effort and not an individual effort. Group learning enhances better understanding and decreases dissonance among students.

### INTEGRATION ON LIFE SKILLS INTO TEACHING METHODOLOGIES

Learning takes place in every walk of life – from taking our first baby steps to landing a person on the surface of the Moon. Learning's from life skills is, perhaps, the most essential part of overall student development.

### BRIDGING THE GAP

Students in a classroom learn at different levels, therefore, there is a need for the teacher to adopt various innovative methods, to bridge gaps between the understanding levels of the first child and the last child.

## About Voyager

# Voyager

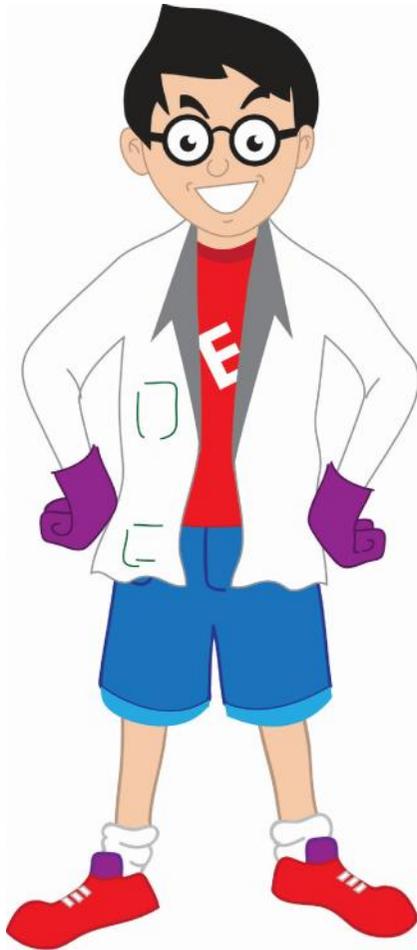
GENERAL SCIENCE



The world of science is constantly evolving, in the world we live in. New experiments, new inventions and new discoveries change the face of science on a regular basis. Voyager is a book that enables young learners to capture how science has helped the human race from time immemorial.

Equipped with a storytelling format, it is tailored to be generationally relevant to children of this era. Engaging students through a storyline, Voyager is a relaxed, fun way to learn the basics of general science and to get acquainted to changes and advancements in the field of science.

# Hello!



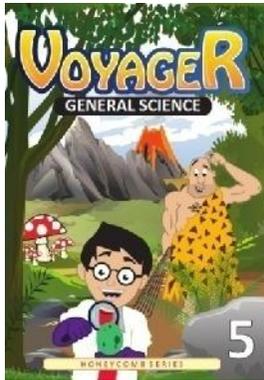
Meet Buzz, a young boy who enjoys conducting experiments of his own. He happens to build a time machine and travel back in time. He stumbles upon Rocky, the caveman and strikes a friendship with him.

Buzz's journey is chronicled in Voyager. In essence, science is a subject which constantly evolves with new discoveries and experiments. It is in this spirit that the Voyager Series has been created.



# Structure & Framework

## Student



**TEXTBOOK**  
Equipped with a storytelling format and many other exciting features.

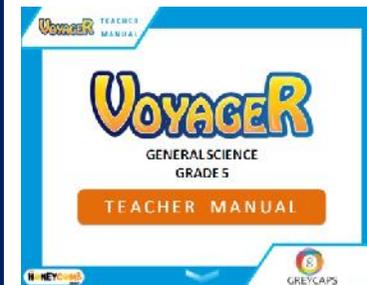


**EVALUATION**  
Assessments sheets provided online for teachers to evaluate students.

## Teacher



**CURIOSITY KIT**  
An aid provided for teachers to reinforce concepts through quizzes and other activities.



**TEACHER MANUAL**  
Provided online to act as a guide for teachers.

## IN THE TEXTBOOK

# Features



The creation of characters brings concepts to life and enables better learning.

Interactive exercise formats at the end of each chapter, which follows the concept of learning by teaching.



Activity based learning becomes an integral part of overall child development.



### FACT HOPPER

Interesting trivia based information that enhances knowledge.

## IN THE CURIOSITY KIT

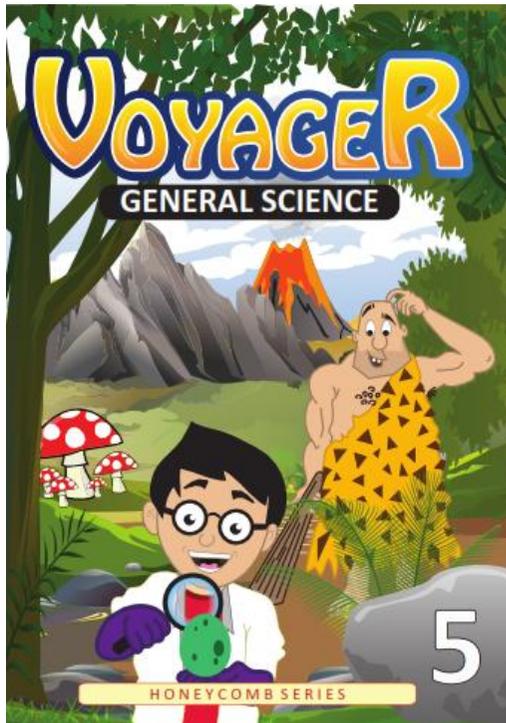
# Features

The **Curiosity Kit** is designed to reinforce teaching material in a fun and innovative way for school students. It is a set of activities and games which will enable teachers to create a fun-filled atmosphere in the classroom. It ensures wholesome learning and easier recall of facts related to the subject at hand.



- 🔍 The Voyager Grade 5 kit contains 45 cards.
- 🔍 The cards are divided into chapters in tandem with the textbook and are colour coded.
- 🔍 Each chapter contains activities with a set of instructions for the teachers and enumerates how it will be beneficial for the students.

## Objectives of Voyager 5



Voyager 5 continues with understanding surroundings and how we interact with them. Students will be acquainted with their immediate environment and then progress towards understanding the world at large.

The objectives of Voyager 5 are as follows:-

- Sparking curiosity (new topics)
- Enlisting the assistance of narrative learning
- Encouraging learning by teaching
- Encouraging learning through activities

# Chapter Summaries

THE LIVING SYSTEM

HUMAN BODY AND ORGAN  
SYSTEMS

HEALTH, HYGIENE AND  
FIRST AID

ROCKS, SOIL AND  
MINERALS

AIR, WATER AND THE  
ENVIRONMENT

OUR UNIVERSE

FORCE, WORK AND  
MACHINES



## THE LIVING SYSTEM

1

### Plant Reproduction

This chapter explains the concept of reproduction in plants by elaborating upon topics such as germination, types of seeds, seed dispersal, reproduction in non-flowering plants, etc. The chapter also discusses the topics of agriculture and its steps, natural and artificial vegetative propagation.

2

### Habitat of Animals

The chapter gives detailed explanation about the various aspects of the habitat of an animal. The chapter explains aspects of the animal world such as feeding, body covering, movement, migration, interdependence of animals and plants etc., among other things.

## THE LIVING SYSTEM

### 1 Plant Reproduction

Answers

**DO THIS** Page  
**8**

- i) The rice grain will not split.
- ii) The green gram will split into two parts.
- iii) Rice is a monocot and green gram is a dicot plant. This is because the rice grain had only one cotyledon and thus, couldn't split. The same way, the green gram split because it had two cotyledons.

 **Page**  
**16**

- 1) Answer the following questions in your notebook.
  - a. Plants and animals depend on each other and co-exist together for survival, to form a biotic community.
  - b. The process by which plants create new plants is called reproduction in plants. This process is of two types:-

\* These answers may be unique to each student. Teachers may also get an assortment of responses from students based on what they have learnt from the chapter.

## THE LIVING SYSTEM

### 1 Plant Reproduction

### Answers



Page  
16 & 17

- Reproduction from seeds
- Reproduction through different parts of the plant
- c. Agents of seed dispersal are- wind, water, animals and birds, human beings and explosion.
- d. Reproduction in plants involving only one, single parent, where they reproduce using their own parts like roots, stem or leaves, is called vegetative propagation. It is of two types:-
  - Natural vegetative propagation
  - Artificial vegetative propagation
- e. Pine trees have cones which contain seeds in them. They produce male cones and female cones. The pollen from the male cone is blown by the wind and lands on the female cone, where it develops into seeds.
- f. Steps involved in agriculture are as follows:-
  - i) Tilling the land
  - ii) Sowing the seeds
  - iii) Adding manure to the soil
  - iv) Watering the crops through irrigation
  - v) Spraying pesticides or fertilisers
  - vi) Harvesting

\* These answers may be unique to each student. Teachers may also get an assortment of responses from students based on what they have learnt from the chapter.

## THE LIVING SYSTEM

### 1 Plant Reproduction

### Answers



2) Answer briefly.

- a. Monocotyledons produce seeds with one cotyledon while dicotyledons produce seeds with two cotyledons.
- b. The process of growth from a seed to a seedling is known as germination. Factors necessary for germination are:-  
Soil, water, sunlight and air.
- c. a) **Dispersal by water**  
Seeds of some plants are carried

away and deposited near water banks. These seeds grow in a different place into a new plant, as they are carried away by water. These seeds are light but strong and can float on water.

b) **Dispersal by animals**

Animals bury seeds and forget them. As a result, many seeds are accidentally dispersed. Birds too, carry seeds in their beak and drop them in different places. A few plants produce seeds that stick to animals skin or feathers and thus, get dispersed.

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## THE LIVING SYSTEM

### 1 Plant Reproduction

### Answers



Page  
16 & 17

- d. Different types of artificial vegetative propagation:-  
**Cutting-** In this method, a part of the plant is cut carefully and planted into moist soil. After some days, a new plant starts growing from the cut part. The part of the plant used is the root, stem or leaf.

**Layering-** A long branch of a parent plant is pulled down and covered with moist soil. The branch detaches itself after some days from the

parent plant and grows into a new plant.

**Grafting-** It involves two plants. The upper part of the stem without root (stock), is cut from one plant and attached to another stem of the plant with roots (scion). They are tied together and after a few days, they become one plant.

### 3) Choose the correct answer.

- a. Vegetative propagation
- b. Embryo
- c. Monocot
- d. Dicot
- e. Sunlight
- f. Bulbs

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## THE LIVING SYSTEM

### 1 Plant Reproduction

Answers



Page  
17 & 18

4) State whether true or false.

- a. False    d. False
- b. True     e. True
- c. True

5) Name any two of the following.

- a. Dispersal by wind, dispersal by explosion
- b. Sunlight, Water
- c. Coconut, Lotus
- d. Cutting, Layering
- e. Pine trees, Fir trees

6) Identify the types of reproduction from the picture.



NATURAL  
VEGETATIVE  
PROPAGATION



LAYERING



GRAFTING



NATURAL  
VEGETATIVE  
PROPAGATION

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## THE LIVING SYSTEM

2

### Habitat of Animals

Answers



Page  
27 & 28

1) Define the following.

- a. Respiration- The process of animals breathing in oxygen and giving out carbon dioxide.
- b. Amphibians- Animals which live on both land and water.
- c. Flippers- Modified wings of penguins, used for swimming.
- d. Food chain- Connection showing plants as producers and animals as consumers.
- e. Migration- Long distance movement,

where animals move to distant places and return later.

2) Answer the following questions in your notebook.

- a. The environment in which an animal lives and performs a certain set of functions is called a habitat.
- b. Whales have a hole on top of their heads, called a 'blow hole', which helps them in breathing.
- c. Tiny holes in the body of insects, which help them in breathing, are called spiracles.

\* These answers may be unique to each student. Teachers may also get an assortment of responses from students based on what they have learnt from the chapter.

## THE LIVING SYSTEM

2

Habitat of Animals

Answers



Page  
27 & 28

- d. Fishes use organs called gills to breathe.
- e. Animals which depend on dead organisms for food are called scavengers. Examples of scavengers are:- Crow, housefly, vulture, etc.
- f. The outer shell is hard and protects the soft bodies of animals like snails and tortoises.
- g. Many food chains together, form a food web.

- 3) Answer briefly.
  - a. Mammals and reptiles have lungs that help them in the process of respiration. In addition to the lungs, birds also have air sacs which help in pushing air in one direction. Aquatic animals breathe through gills, which makes it easy for them to breathe the oxygen dissolved in water. Whales and dolphins are aquatic animals, but they are mammals and hence, breathe through lungs. Whales have a blow hole on top of their head, which helps them to breathe.

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## THE LIVING SYSTEM

2

### Habitat of Animals

Answers



Page  
27 & 28

b. Depending upon their feeding habits, animals are of the following types:-

- Herbivores:- Animals that depend only on plants for food. They eat grass, leaves and various other parts of plants.
- Carnivores:- Animals that depend on other animals for meat and flesh. Animals like tiger, lion, fox, etc. are carnivores.
- Omnivores:- Animals that depend on both plants and animals for food.

Human beings, bears, owls, etc. are omnivores.

- Scavengers:- Animals that depend on dead organisms for food like crows, houseflies, etc.
- Decomposers:- Microorganisms that depend on dead and decaying matter for food and break them down into simpler components.

c. The fore limbs are the front two limbs, used to write, hold, catch, throw, etc. Hind limbs are the other two limbs, which are used for walking, running, jumping, skipping, etc.

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## THE LIVING SYSTEM

2

### Habitat of Animals

Answers



Page  
27 & 28

d. Animals migrate in search of food, to escape predators, escape harsh weather, etc. Sometimes, they go to faraway places to reproduce in more favourable conditions.

e. Plants depend on animals for seed dispersal. Plants also need carbon dioxide to produce their food, which is given out by animals during respiration. Plants use this carbon dioxide to make their food. The waste released from the body of animals acts like a natural fertiliser.

Similarly, animals depend directly or indirectly on plants for food. Animals also depend on plants for the oxygen given out during photosynthesis by plants. This oxygen is necessary for animals to breathe. Forests provide shelter to many birds and animals. They also provide human beings with medicines, wood, oil, etc.

4) Circle the odd one out and give reason.

- a. Amphibians- All others are feeding habits of animals.
- b. Fur- All others are used for movement.

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## THE LIVING SYSTEM

2

Habitat of Animals

Answers



Page  
27 & 28

- c. Whale- Whale is a mammal, all others are fish.
- d. Lion- All the others walk on their hind limbs.
- e. Duck- All others are aerial animals.

### 5) Fill in the blanks.

- a. Animals, Human beings
- b. Scavengers
- c. Hind limbs
- d. Webbed
- e. Scales
- f. Producers, Consumers

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## HUMAN BODY AND ORGAN SYSTEMS

- 3 Nervous System**  
A keen understanding of the human body is imperative as children grow up. The chapter lists the organ systems in a human body and gives a detailed explanation of the human nervous system and the sense organs.
- 4 Bones and Muscles**  
This chapter gives an elaborate explanation of the skeletal system, all of its parts and the different types of joints. The chapter also throws light on the muscular system and the different types of muscles and tissues.

## HUMAN BODY AND ORGAN SYSTEMS

3

Nervous System

Answers

**DO  
THIS** Page  
**34**

1. When we touch a hot object.
2. When we see any object coming towards us very fast.
3. When we touch a sharp object.



Page  
**37 & 38**

- 1) Answer the following questions in your notebook.
  - a. The organ systems in our body are:-
    - Digestive System
    - Respiratory System

- Circulatory System
- Nervous System
- Muscular System
- Skeletal System
- Excretory System
- Reproductive System

\* These answers may be unique to each student. Teachers may also get an assortment of responses from students based on what they have learnt from the chapter.

## HUMAN BODY AND ORGAN SYSTEMS

### 3 Nervous System

### Answers



Page  
37 & 38

- b. The nervous system is the leader of the organ systems. We need the nervous system, as it controls all the activities of our body and solves the problems. Our sensations and perceptions along with movements, are controlled by the nervous system.
- c. The vertebral column is a long line of bones which protect the spinal cord. The vertebral column is made up of 33 bones. Each bone in the vertebral column is known as a vertebrae.
- d. Small cells in the nerves are called nerve cells. They are also called neurons.
- e. Sense organs are five organs which help us connect to our surroundings through our senses. The five sense organs are:- eyes, ears, nose, tongue and skin.
- f. Sensory neurons carry messages from the sense organs to the brain or the spinal cord. Motor neurons carry messages from the brain or spinal cord to different parts of the body.

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## HUMAN BODY AND ORGAN SYSTEMS

3

### Nervous System

Answers

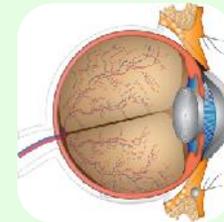


Page  
37 & 38

- g. The nerves that connect the brain and the ear are called auditory nerves.
- h. The brain is made up of three parts:-  
Cerebrum:- The cerebrum is the largest part of the brain. It helps in thinking, reasoning and also in remembering things. It also helps us in moving our body parts.  
Cerebellum:- The cerebellum is found below the cerebrum. It also helps to move our muscles and helps in maintaining the balance of our body.

Medulla Oblongata:- It is the lowest part of the brain. The spinal cord begins from here. The medulla oblongata controls various activities like breathing, circulation of blood, etc.

- i. The coloured part of the eye that is visible to us, is the iris. The iris is protected by a transparent layer called the cornea. At the centre of the iris is the pupil. Lens is located behind the pupil. The Retina is located behind the eyes, which is connected to the brain



\* These answers may be unique to each student. Teachers may also get an assortment of responses from students based on what they have learnt from the chapter.

## HUMAN BODY AND ORGAN SYSTEMS

3

### Nervous System

Answers



Page  
37 & 38

through the optic nerve.

- j. The skin is the outer covering of our body. It is the largest external organ of our body. It protects all our internal organs. The topmost layer of the skin is called epidermis. There are skin receptors below the epidermis, which send information to the brain. Skin throws out waste in the form of sweat. It also helps us to feel things.

2) Give one word for the following.

- a. Nervous System
- b. Skull
- c. Vertebrae
- d. Spinal Nerves
- e. Optic Nerve
- f. Epidermis

3) State whether true or false.

- a. False
- b. True
- c. False
- d. False
- e. True

\* These answers may be unique to each student. Teachers may also get an assortment of responses from students based on what they have learnt from the chapter.

# HUMAN BODY AND ORGAN SYSTEMS

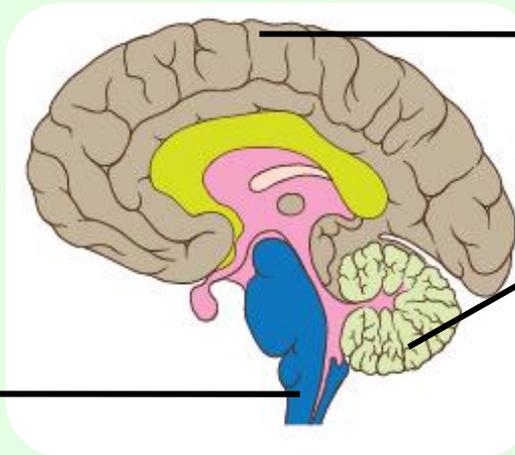
## 3 Nervous System

Answers



Page 37 & 38

4) Label the parts of the brain correctly.



CEREBRUM

CEREBELLUM

MEDULLA OBLONGATA

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## HUMAN BODY AND ORGAN SYSTEMS

4

Bones and Muscles

Answers

**DO  
THIS** Page  
**44**

Joints give shape to the body, they help us walk, bend, write, lift, etc.



Page  
**46 & 47**

- 1) Answer the following questions in your notebook.
  - a. The skeletal system provides structure to our body. The bones of the skeletal system, protect the delicate internal organs from damage and injuries. Without the skeletal system, our body would be shapeless.
  - b. Cartilages are strong but flexible parts of the skeletal system. Cartilages are present on the ears, the tip of the nose, etc.
  - c. Skull forms the outer covering of the brain. There are openings in the skull

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## HUMAN BODY AND ORGAN SYSTEMS

4

### Bones and Muscles

Answers



Page  
46 & 47

for the eyes, ears and nose. The teeth are attached to the upper jaw and the lower jaw. The upper jaw is fixed to the skull, while the lower jaw is attached to a joint and is movable. The human skull is made up of 22 bones. Eight bones at the back protect the brain, while fourteen bones in the front form the facial structure.

- d. The vertebral column is made up of small bones, called the vertebrae. The human body has 33 vertebrae.

- e. The spaces between the ribs are called intercostal spaces. These contain nerves, muscles, arteries and veins.
- f. The floating ribs are located below the 10 pairs of ribs that are attached to the sternum and the vertebral column. These are not attached to anything and are thus, called the floating ribs.
- g. The fore limbs contain the following:- humerus, radius, ulna, wrist and elbow. The hind limbs contain the following:- femur, fibula, tibia, knee cap and ankle.

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## HUMAN BODY AND ORGAN SYSTEMS

4

Bones and Muscles

Answers



Page  
46 & 47

- h. The pectoral girdle forms a part of the shoulder where the fore limbs are attached. The pelvic girdle is the largest bone in the body which forms the hip.
- i. Different kinds of joints present in the human body are:-
  - Hinge joint
  - Ball and socket joint
  - Pivot Joint
  - Ellipsoidal Joint
- j. Muscles are soft tissues made up of numerous fibres, which make them

flexible and elastic. Muscles always work through contraction and relaxation. When one muscle contracts, the other muscle relaxes.

k. **Striated or voluntary muscles:-**  
These muscles are attached to the bones and mainly help with movement. These muscles are under our control. They work through contraction and relaxation. They are called striated as they are long strips of muscles.

**Smooth or involuntary muscles:-**  
Involuntary muscles protect and

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## HUMAN BODY AND ORGAN SYSTEMS

4

### Bones and Muscles

Answers



Page  
46 & 47

control the working of the organs. Activities such as blinking, breathing, etc. are controlled by the involuntary muscles.

**Cardiac Muscles:-** These muscles are found only in the heart. They help in pumping blood to all parts of the body. They are striated but are involuntary.

- I. Bones and muscles are connected to each other by tendons, which help in easy movement. Ligaments

connect two bones and are mostly present between joints.

2) Give reasons for the following.

- a. To hold the brain because the brain is a delicate organ and needs to be protected with extra care.
- b. To protect the bones from fracture.
- c. Because they are made up of hinge joints.
- d. Because the limbs in front are modified to use as hands.

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## HUMAN BODY AND ORGAN SYSTEMS

4

Bones and Muscles

Answers



Page  
46 & 47

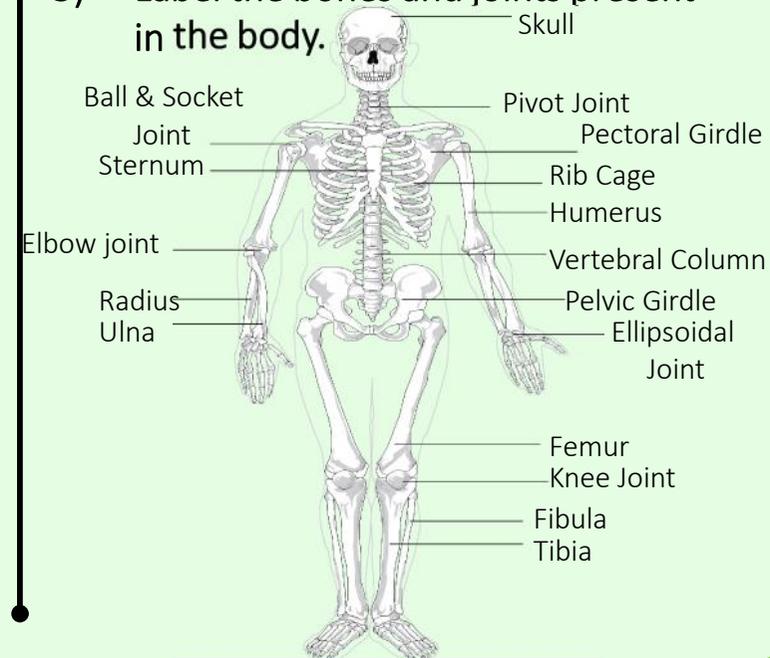
3) Fill in the blanks.

- |                     |           |
|---------------------|-----------|
| a. 22               | d. Femur  |
| b. Vertebral Column | e. Pivot  |
| c. Sternum          | f. Fascia |
| /Breastbone         |           |

4) Match the following.

- |                     |              |
|---------------------|--------------|
| a. Pivot joint      | One          |
| b. Vertebrae        | Thirty three |
| c. Ribs             | Twelve Pairs |
| d. Pairs of girdles | Two          |
| e. Skull Bones      | Twenty two   |

5) Label the bones and joints present in the body.



\* These answers may be unique to each student. Teachers may also get an assortment of responses from students based on what they have learnt from the chapter.

## HEALTH, HYGIENE AND FIRST AID

- 5 Food , health and diseases**  
The chapter gives an overview of the nutrients that we imbibe from food. It also explains the meaning and types of diseases, how communicable diseases are spread, meaning of non-communicable and deficiency diseases.
- 6 Safety and First Aid**  
The chapter talks about the importance of safety in our everyday life and introduces the concept, need and importance of first aid. The chapter also gives detailed explanation on how to administer first aid in a few, basic situations.

## HEALTH, HYGIENE AND FIRST AID

5 Food, health and diseases

Answers

**DO THIS** Page  
**53 & 54**

- i) Breakfast- Upma, Poha, Idli Vada, Omelette, etc.  
Lunch- Roti, Rice, Dal, Sabzi, Curry, Meat, Curd, etc.  
Dinner- Soup, Roti, Rice, Dal, Sabzi, Curry, Meat, Curd, etc.
- ii) Protein, Carbohydrate, Minerals, etc.  
Vaccines are made with weakened microbes, bacteria is used to make curd, yeast is used to make bread, antibiotics are made using microbes, etc.



TEACH  
ROCKY

Page  
**57 & 58**

- 1) Define the following.
  - a. Nutrients- Important substances in food, which help in the growth
  - b. Balanced Diet- A diet which gives our body the nutrition it needs to function properly.

\* These answers may be unique to each student. Teachers may also get an assortment of responses from students based on what they have learnt from the chapter.

## HEALTH, HYGIENE AND FIRST AID

### 5 Food, health and diseases

Answers



Page  
57 & 58

- c. Diseases- Any kind of abnormality in the working condition of the human body is called a disease.
  - d. Microbes- Living organisms that are not visible to our naked eye and can be seen only through a microscope.
  - e. Vaccination- Certain diseases can be prevented by taking vaccines. This process is called vaccination.
  - f. Malnourishment- A condition which occurs when we do not get sufficient amount of food.
- 2) Answer the following questions in your notebook.
- a. Different kinds of nutrients, present in the food and required by the body are:- carbohydrates, fats, proteins, vitamins, minerals and roughage.
  - b. Fats are useful to our body because they get stored in the body and provide energy when our body does not receive carbohydrates. They also provide warmth to our body and regulate body temperature.

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## HEALTH, HYGIENE AND FIRST AID

### 5 Food, health and diseases

( Answers )



Page  
57 & 58

- c. Minerals are important to our body as they help in the growth of bones, supply oxygen to all parts of the body and transmit messages from the nerves to the brain.
- d. Communicable diseases are caused by germs and can be spread from one person to another. These are also called infectious diseases. Diseases caused due to the improper functioning of organs in the body or due to lack of nutrients, are called non-communicable diseases.
- e. Communicable diseases are transmitted through the followings modes:-
- Water
  - Air
  - Insects
  - Direct contact with infected person
- f. We should keep the garbage bins closed and clean the house using disinfectants. We should make sure that water does not collect in one place as mosquitoes breed in stagnant water.

\* These answers may be unique to each student. Teachers may also get an assortment of responses from students based on what they have learnt from the chapter.

## HEALTH, HYGIENE AND FIRST AID

### 5 Food, health and diseases

( Answers )



Page  
57 & 58

- g. Diseases caused due to a decrease in the amount of nutrients required by the body, are known as deficiency diseases. Examples of deficiency disease are:- Marasmus, Kwashiorkor, Night Blindness, Beri-beri, etc.
- h. i) Beri-beri ii) Anaemia  
iii) Osteoporosis
- 3) Write what would happen in the following situations.

- a. Energy will be released in the body.  
b. The infectious disease will be spread to the healthy person as well.  
c. Dirt will accumulate under the nails and may enter the body while eating.  
d. Deficiency diseases like Scurvy will occur.
- 4) Unscramble the words or use the clues to answer the following.
- a. Vaccines      d. Goitre  
b. Roughage     e. Protein  
c. Symptom

\* These answers may be unique to each student. Teachers may also get an assortment of responses from students based on what they have learnt from the chapter.

## HEALTH, HYGIENE AND FIRST AID

### 5 Food, health and diseases

Answers



Page  
57 & 58

5) State whether true or false.

- |          |          |
|----------|----------|
| a. True  | b. False |
| c. False | d. True  |
| e. False | f. True  |

6) List any seven communicable and non-communicable diseases.

#### Communicable

- |               |                |
|---------------|----------------|
| • Chicken Pox | • Malaria      |
| • Common Cold | • Polio        |
| • Dengue      | • Tuberculosis |
|               | • Measles      |

#### Non-Communicable

- Scurvy
- Rickets
- Goitre
- Cancer
- Diabetes
- Asthma

\* These answers may be unique to each student. Teachers may also get an assortment of responses from students based on what they have learnt from the chapter.

## HEALTH, HYGIENE AND FIRST AID

6

### Safety and First Aid

Answers



Page  
66 & 67

- 1) Answer the following questions in your notebook.
  - a. Injured people need to be given immediate treatment before the doctor arrives. This is called first aid.
  - b. In case of cuts caused by sharp metal objects, a tetanus injection is given to prevent infections.
  - c. A fracture is a broken bone, caused by a person falling or getting hurt. When a fracture happens, the area

around the broken bone swells up causing severe pain.

- d. Rabies is a virus that is present in some dogs, cats, etc. If an animal infected with the rabies virus bites a human being, the person gets infected as well.
- e. A fire extinguisher is used to put off small fires.
- f. Burns are caused when a person comes in direct contact with fire, or when any hot substance comes in contact with the skin.

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## HEALTH, HYGIENE AND FIRST AID

6

Safety and First Aid

Answers



Page  
66 & 67

2) Answer briefly.

- a. A first aid box is useful in case of emergencies. It consists of emergency medical supplies such as bandages, antiseptic cream, ointment, cotton, antiseptic lotion, etc. This is very useful in giving first aid to the injured person.
- b. If the arm is fractured, we need to make a sling with a piece of cloth or bandage and tie it around the neck. After this, the victim should

be taken to the doctor immediately.

c. In case of snake bites:-

- Make the person stand or sit still.
- Prevent any kind of bodily movement, as this may spread the venom faster.
- Tie a piece of cloth or bandage tightly, a few centimetres above the bite, to obstruct the circulation of blood.
- Make a small cut, few centimetres above the bite, to allow the poisoned blood to flow out.

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## HEALTH, HYGIENE AND FIRST AID

6

### Safety and First Aid

Answers



Page  
66 & 67

- Take the victim to the doctor immediately after first aid.
- d. In case of a fire caused by kerosene or petrol:-
  - Do not put water on the fire. Kerosene and petrol are lighter than water and hence, will float, as the fire continues to burn.
  - Throw mud or sand over the fire as it cuts off air supply, or use a fire extinguisher.
  - e. If the clothes catch fire, we should do the following:-
    - Ask the person to lie down and roll on the floor.
    - Wrap the person completely in a rug, carpet, or blanket, if available, to cut off air supply.
- 3) Choose the right answer.
  - a. Use fire extinguishers
  - b. By rolling on the floor
  - c. Tie a crepe bandage
  - d. Tie a piece of cloth tightly above the wound and make a cut, a few centimetres above the bitten area.

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## HEALTH, HYGIENE AND FIRST AID

6

Safety and First Aid

Answers



Page  
67 & 68

- 4) Fill in the blanks.
- a. Accident
  - b. Fracture
  - c. Sling
  - d. Rabies
  - e. 101
  - f. Carbon dioxide

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## ROCKS, SOIL AND MINERALS

- 7** **Rocks and Minerals**  
This chapter sheds light on the basic classification of rocks and then explains the types of rocks found under each classification. The chapter also explains what a mineral is, what are coal and petroleum, and their importance.
  
- 8** **Soil**  
The chapter sheds light on the structure and composition of soil, the issue of soil erosion and its causes, while giving tips on how soil erosion can be prevented.

## ROCKS, SOIL AND MINERALS

7

Rocks and Minerals

Answers



Page  
75 & 76

1) Answer the following questions in your notebook.

- a. A rock is a naturally occurring material which contains minerals in it. It forms a part of the Earth's crust.
- b. Different kinds of igneous rocks are:-
- Granite
  - Pumice
  - Igneous
  - Basalt

- c. Sedimentary rocks are formed by the accumulation of different materials on the Earth's surface, such as broken pieces of other rocks, dead plants and animals, minerals and organic matter. They either deposit on the land's surface or at the bottom of the ocean. Over the years, these materials are compressed due to the Earth's pressure and weather, thus solidifying into layers of sedimentary rocks.
- d. Granite transforms into gneiss. It is hard and is used to polish granite tiles.

\* These answers may be unique to each student. Teachers may also get an assortment of responses from students based on what they have learnt from the chapter.

## ROCKS, SOIL AND MINERALS

7

Rocks and Minerals

Answers



Page  
75 & 76

- e. A mineral is a naturally occurring chemical substance that is found in rocks, or combined with other minerals.
  - f. We should use coal and petroleum carefully as they are non-renewable resources and last only for sometime.
- 2) Answer briefly.
- a. Igneous rocks are made of a mixture of molten rocks inside the

Earth called magma, which comes out on the surface of the Earth in the form of lava. When this lava hardens, igneous rocks are formed. On the other hand, sedimentary rocks are formed by the accumulation of different materials on the Earth's surface, which get compressed over the years and turn into sedimentary rocks.

b. Different kinds of metamorphic rocks are:-

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## ROCKS, SOIL AND MINERALS

7

Rocks and Minerals

Answers



Page  
75 & 76

**Slate-** Shale transforms to slate. It is smooth, but hard. It can split into various layers and hence, is used to make blackboards.

**Quartzite-** Sandstone transforms to quartzite. It is a hard rock and is used to make statues.

**Gneiss-** Granite transforms into gneiss. It is hard and is used to polish granite tiles.

**Marble-** Marble is the hardest form of

limestone. It is found in different colours and can be polished easily.

- c. Plants that lived millions of years ago died and were buried inside the soil by wind and water. Slowly, they started decomposing and were buried deeper into the Earth. The heat and pressure inside the Earth changed these dead plants into black, solid matter called coal.
- d. All the dead sea animals were buried deep inside the ocean beds. Due to

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## ROCKS, SOIL AND MINERALS

7

Rocks and Minerals

Answers



Page  
75 & 76

intense heat and pressure inside the Earth, the buried organisms were transformed to form crude oil. The crude oil that we obtain is purified to get petroleum.

### 3) Fill in the blanks.

- |                |              |
|----------------|--------------|
| a. Magma       | d. Petroleum |
| b. Igneous     | e. Shale     |
| c. Sedimentary | f. Crude oil |

### 4) Match the following.

- |                 |                   |
|-----------------|-------------------|
| a. Gneiss       | Granite           |
| b. Conglomerate | Sedimentary Rocks |

- |               |               |
|---------------|---------------|
| c. Hawa Mahal | Sandstone     |
| d. Petroleum  | Crude Oil     |
| e. Obsidian   | Igneous Rocks |

### 5) State whether true or false.

- |          |          |
|----------|----------|
| a. True  | d. False |
| b. False | e. False |
| c. False |          |

### 6) Name the following.

- |              |              |
|--------------|--------------|
| a. Pumice    | e. Obsidian  |
| b. Sandstone | f. Quartzite |
| c. Slate     |              |
| d. Limestone |              |

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## ROCKS, SOIL AND MINERALS

8

Soil

Answers



Page  
81

- 1) Answer the following questions in your notebook.
  - a. Soil is formed due to the weathering of rocks. Soil forms the topmost layer of the Earth's crust.
  - b. Soil is important because it contains water and minerals which are necessary for plants to grow. It protects the seeds from extreme weather conditions and pests. It also holds the roots firmly together. Dead plants and animals

- c. Soil has three layers. They are:-  
**Topsoil-** Topmost layer of the soil, it contains minerals and organic matter which make it fertile. It also contains living and decomposed materials like leaves, plants, sticks, etc. It is a mixture of sand and clay. Roots of plants are usually found in this layer.  
**Subsoil-** This layer is found below the topsoil and above the bedrock. It is

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## ROCKS, SOIL AND MINERALS

8

Soil

Answers



Page  
81

less fertile compared to topsoil. It contains lesser minerals and organic matter. Plants with long roots may grow into the subsoil.

**Bedrock-** This is the bottom layer that consists of only rocks and has no fertility. It is made of rocks and some organic matter. This layer does not allow water to pass through.

- d. Dead plants and animals decay and form the organic matter in the soil known as humus. It is important

because it helps in retaining moisture and nutrients in the soil.

- e. The loss of topsoil by wind or water is known as soil erosion.

f. Causes of soil erosion are:-

- Heavy rains, which wash away the topsoil.
- Famines, during which the topsoil becomes dry and is blown away by wind.
- Human activities such as deforestation and overgrazing. This is because, with the loss of plants, the

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## ROCKS, SOIL AND MINERALS

8

Soil

Answers



Page  
81

roots which bind the soil also disappear.

g. Ways of conserving soil are:-

**Afforestation:-** Planting trees to protect the environment. Plants will grow into trees which have strong roots and thus, help bind the soil.

**Terrace Farming:-** A type of farming in which slopes of hills are cut into steps. During rains, the steps reduce the speed of flowing water and prevent soil erosion.

**Using cover crops or windbreaks:-**

Fields shouldn't be left bare as winds can cause soil erosion in such lands. To prevent this, cover crops such as grass can be grown. A row of thick trees can also be planted around the field, depending upon the direction of the wind in the area.

**Construction of Bunds:-** Overflowing water bodies during monsoon contribute towards soil erosion. Bunds can be constructed along the banks of rivers to prevent this.

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## ROCKS, SOIL AND MINERALS

8

Soil

Answers



Page  
81

2) Fill in the blanks.

- a. Soil
- b. Bedrock
- c. Soil Erosion
- d. Conservation of soil
- e. Bunds

3) State whether true or false.

- a. True
- b. False
- c. False
- d. True
- e. False

\* These answers may be unique to each student. Teachers may also get an assortment of responses from students based on what they have learnt from the chapter.

## AIR, WATER AND ENVIRONMENT

- 9 Air and Water**

As children move into higher grades, a more in-depth understanding of the environment around us is necessary. The chapter explains the layers of the atmosphere and its importance, properties of air, water and its properties, etc. The chapter also elaborates upon the various methods of removing impurities from water.
- 10 Our Environment**

This chapter is dedicated towards highlighting the issue of pollution, types of pollution, its effects, etc. The chapter also highlights the subject of natural resources, its forms and methods to preserve these resources.
- 11 Natural Calamities**

Calamities are a very natural part of human existence. The chapter sheds light on different types of natural calamities, steps for disaster management and organisations dedicated towards this cause.

## AIR, WATER AND ENVIRONMENT

### 9 Air and Water

### Answers



Page  
91 & 92

- 1) Answer the following questions in your notebook.
- A blanket of air that surrounds the Earth is called atmosphere. The atmosphere contains oxygen that is important to living things. It forms a protective layer by preventing harmful rays of the Sun from entering the Earth. The atmosphere has different layers.
  - The ozone layer is present in the second layer of the atmosphere,
- which is the stratosphere.
  - Humidity is caused by the water vapour present in the air along with other gases.
  - The properties of air are:-
    - Air has weight
    - Air occupies space
    - Air exerts pressure
    - Air is needed for burning
  - Water has the ability to dissolve many things in it. Thus, it is called a universal solvent.
  - Methods of removing impurities from water are:-

\* These answers may be unique to each student. Teachers may also get an assortment of responses from students based on what they have learnt from the chapter.

## AIR, WATER AND ENVIRONMENT

### 9 Air and Water

### Answers



Page  
91 & 92

- Sedimentation and decantation
  - Filtration
  - Evaporation
  - Distillation
- g. We can purify water at home by boiling, which kills germs present in the water, or by using water purifiers and filters.
- 2) Answer briefly.
- a. **Troposphere:-** This layer extends up to a height of 12 kms. Most of the gases are present in this region.

Weather changes occur within this layer.

**Stratosphere:-** This layer begins from the end of the troposphere and stretches up to 50 kms. The air is less dense in this area. The ozone layer which protects the Earth from harmful Ultra-Violet rays is present in this region.

**Mesosphere:-** It extends for 50 kms to 80 kms above the Earth. There is a decrease in temperature in this area, as the air becomes thinner.

**Thermosphere:-** This area has increased

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## AIR, WATER AND ENVIRONMENT

### 9 Air and Water

### Answers



Page  
91 & 92

temperature and is located above the mesosphere. All the satellites are placed in this region.

**Exosphere:-** This is the outermost layer and the air is very thin in this layer. Beyond this region there, is no air.

- b. **Air occupies space:-** Air is a form of matter and hence, it occupies space. This can be seen by putting a ping pong ball into a jar filled with water. Then, taking a glass and putting a tissue paper within it.

When the glass is inserted into the water with the ping pong ball present inside, then taken out and the tissue paper is removed, the tissue paper will be dry. This proves that the glass contained air. When the glass was inserted into the jar, the air could not escape and occupied the space in the glass, thus keeping the tissue paper dry.

**Air is needed for burning:-** Air contains oxygen, which is important for burning. This can be seen by taking three burning candles and not covering one, covering

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## AIR, WATER AND ENVIRONMENT

### 9 Air and Water

### Answers



Page  
91 & 92

the second one with an open, cylindrical tube such that the flame can be seen on top, and covering the third with a glass. We see that the fire of the candle which was covered with glass, gets extinguished. This is because by covering it with glass, we took away the air supply of the fire.

- c. We need the atmosphere because the atmosphere contains oxygen that is important for living things. It also forms a protective layer

by preventing harmful rays of the Sun from entering the Earth. The atmosphere has different layers.

- d. Properties of water:-
- Pure water is colourless, tasteless and odourless.
  - Water can be found in three forms- solid, liquid and gas.
  - Water is used as a cooling agent, as it can absorb heat from other objects and liquids.
  - Water can dissolve many things in it hence, it is called a universal solvent.

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## AIR, WATER AND ENVIRONMENT

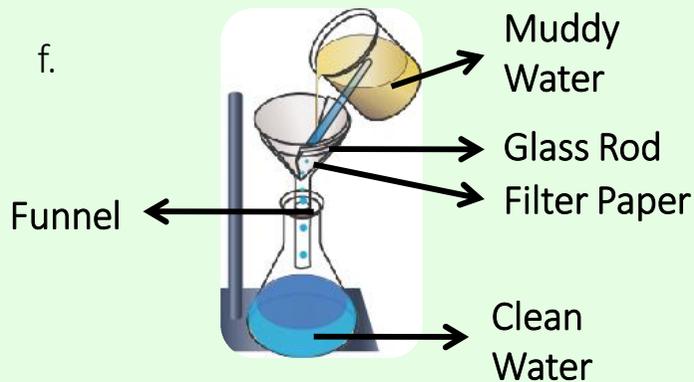
### 9 Air and Water

### Answers



Page 91 & 92

- e. When we use a straw, we suck in air through the straw. The air pressure pushes the juice into the straw which then, enters our mouth.



A funnel is placed on the stand as shown. A filter paper, turned into the shape of a cone, is placed inside the funnel. A clean, empty beaker is placed below the funnel. Muddy water is poured into the funnel slowly, using a glass rod. After sometime, we can see that the water in the beaker below is clean and all the dust particles have been collected in the filter paper.

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## AIR, WATER AND ENVIRONMENT

### 9 Air and Water

### Answers



Page  
91 & 92

The method of separating water and soluble impurities through evaporation and condensation is called distillation. For this, a round-bottomed flask is taken, with a bent tube as its neck and filled with some salt water. This flask is connected to another similar flask, using tubes. The first flask is placed over a burner and the second



flask is placed in a dish with cold water. When the water in the first flask is heated, it evaporates, passes through the tubes and enters into the second flask. As cold water surrounds the second flask, it cools the water vapour, thus condensing it to form water. Salt is left behind in the first flask and water gets collected in the second flask. Thus, we get both salt and water.

- 3) Give reasons for the following.  
(continued in the next page)

\* These answers may be unique to each student. Teachers may also get an assortment of responses from students based on what they have learnt from the chapter.

## AIR, WATER AND ENVIRONMENT

### 9 Air and Water

Answers



Page  
91 & 92

- a. It provides oxygen for survival and protects by preventing harmful rays of the Sun from entering the Earth.
- b. Because air has weight.
- c. Because air and oxygen are required for burning.
- d. It can dissolve most things in itself.
- e. Because we get water at the end of distillation, but not evaporation.
- f. Because tap water may contain germs in it which need to be killed and removed.
- 4) Choose the correct answer from the words given below.
- a. Troposphere
- b. Nitrogen, Oxygen
- c. H<sub>2</sub>O
- d. Solution
- e. Sedimentation
- 5) Name the following.
- a. Exosphere
- b. Water
- c. Ozone
- d. Filtration
- e. Nitrogen

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## AIR, WATER AND ENVIRONMENT

10

Our Environment

Answers



Page  
99 & 100

- 1) Answer the following questions in your notebook.
  - a. Pollution is the mixing of the harmful gases released from vehicles and industries and non-biodegradable waste, with the abiotic components, such as air, water and soil, of the environment. Different types of pollution are:- air pollution, water pollution, noise pollution, soil pollution, thermal pollution and radiation pollution. When harmful gases like sulphur

- dioxide and nitrogen oxide released by factories, combine with water droplets in the atmosphere, acids are formed. When this falls down as rain, it is known as acid rain.
  - c. The greenhouse effect causes global warming. Greenhouse effect takes place when the carbon dioxide in our atmosphere does not allow heat to escape.
  - d. The two kinds of resources are:- renewable resources and non-renewable resources.

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## AIR, WATER AND ENVIRONMENT

10

Our Environment

Answers



Page  
99 & 100

- e. Wind turbines are large machines which are set up to capture wind energy and convert it into electrical energy.
- f. Carbon dioxide does not allow the heat to escape from our atmosphere, which has led to an increase in temperatures and melting of the ice caps. This is known as the greenhouse effect.
- g. Pollution has an adverse effect on the atmosphere and also on other

living beings. The ozone layer is depleting due to harmful gases that are released into the air. Many animals and plants are dying, as they are unable to adapt to the changes around them.

Petroleum:- Also known 'liquid gold', it is an important source of fuel. Most of the modern developments have occurred due to transportation, for which fuel is required. Petroleum is extracted from crude oil. During this process, many other resources such as kerosene, diesel, vaseline, rayon, etc. are obtained.

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**AIR, WATER AND ENVIRONMENT**

10

Our Environment

Answers



Page  
99 & 100

i) To conserve natural resources we need to follow reduce, reuse and recycle. We need to reduce the use of resources, conserve resources as much as possible. We should also recycle the resources such as glass, plastic, paper, etc. Another R we should follow is that of refuse. We should refuse to buy or take things that we do not require.

2) Fill in the blanks.

- a. Air pollution
- b. Global warming

- c. Hydro
  - d. Liquid gold, black diamond
  - e. Reduce, reuse, recycle
- 3) Put 'R' against renewable resources and 'N' against non-renewable resources.

|       |   |           |   |
|-------|---|-----------|---|
| Gold  | N | Wind      | R |
| Water | R | Petroleum | N |
| Coal  | N | Aluminium | N |
| Sun   | R | Soil      | R |

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AIR, WATER AND ENVIRONMENT

10

Our Environment

Answers



Page 99 & 100

4) Match the following.

- |                      |                 |
|----------------------|-----------------|
| a. Ultraviolet rays  | Ozone Layer     |
| b. Greenhouse effect | Global Warming  |
| c. Acid rain         | Air Pollution   |
| d. Deafness          | Noise Pollution |
| e. Hydropower        | Water           |

5) State whether the following sentences are true or false.

- a. False
- b. True
- c. True
- d. True
- e. False

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## AIR, WATER AND ENVIRONMENT

11

Natural Calamities

Answers



Page  
105 & 106

- 1) Answer the following questions in your notebook.
  - a. Naturally occurring disturbances such as earthquake, floods, tsunami, etc. are known as natural disasters.
  - b. When strong winds start whirling into a spiral in a low pressure area, it is called a cyclone. They are also called as hurricanes and typhoons.
  - c. While an earthquake occurs on land, a tsunami is an underwater earthquake, caused due to

disturbances under the surface of the ocean beds.

- d. National Crisis Management Committee, National Centre For Disaster Management, United Nations Organisation, The International Federation of the Red Cross and Red Crescent Societies, The International Emergency Management Society, etc.
- e. Different kinds of volcanoes are:-  
**Active Volcanoes:-** These volcanoes keep erupting often and are always active.

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AIR, WATER AND ENVIRONMENT

11

Natural Calamities

Answers



Page 105 & 106

**Dormant Volcanoes:-** A volcano which has not erupted in a long time, but has the possibility of erupting in the future.

**Extinct Volcanoes:-** A volcano which erupted thousands of years ago and has no possibility of erupting again.

- f. A layer of the Earth under the crust consists of tectonic plates. Due to the internal forces, there is a disturbance in the movement of the tectonic plates which affects the surface of the Earth. This causes

- sudden vibrations on the Earth's surface, known as an earthquake.
- g. Floods are caused due to the overflowing of water bodies such as lakes, rivers, etc. during the rainy season. Droughts are caused when there is a severe scarcity of water. The land becomes dry without any moisture due to a lack of rains.
- h. We can help the victims of natural disasters by doing the following:-
- i. We can find out about the occurrence of a natural disaster

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## AIR, WATER AND ENVIRONMENT

11

Natural Calamities

Answers



Page  
**105 & 106**

through the news. However, in remote places, where this may not be available, the government should take immediate actions to send a rescue team.

- If evacuation is not possible, the rescue team should prepare the people to face the disaster by training them in disaster management skills.
- In case of massive damages, the government should send the Army and doctors to rescue and help

people.

- We can donate clothes, food and other items necessary for the victims. We can also volunteer with the rescue team and help the victims.

2) Fill in the blanks.

- Richter scale
- Japan
- National Centre For Disaster Management
- Cyclone
- Earthquake

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## AIR, WATER AND ENVIRONMENT

11

Natural Calamities

Answers



Page  
105 & 106

3) State whether true or false.

- a. False
- b. True
- c. False
- d. True
- e. True

4) Define the following.

- a. Seismograph:- Earthquakes are measured using this.
- b. Vent:- Opening or crack in the volcano through which the magma comes out.

- c. Lava:- Magma that comes out of the vent.
- d. Famine:- Scarcity of food during droughts, due to which people suffer from hunger.
- e. Floods:- Overflowing of water bodies during rains.

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# Chapter Summary

## OUR UNIVERSE

12

### The Moon

This chapter gives description of the Solar System and all its components, surface of the Moon, its phases, tides, etc. The chapter also discusses the concept of light, shadow and eclipse.

## OUR UNIVERSE

12

The Moon

Answers



Page  
115 & 116

1) Answer the following questions in your notebook.

- a. Chunks of stones in our Solar System are called meteoroids. These are also called as meteors.
- b. Comets are made up of frozen gases.
- c. The Sun is a hot ball of fire made mainly of hydrogen and helium gases. The hydrogen turns into helium and thus, releases heat and light.

- d. The asteroid belt is present between Mars and Jupiter.
- e. Planets have a path of their own and revolve around the Sun in this path. This is called an orbit. Similarly, satellites revolve around the planets in an orbit as well.
- f. Neil Armstrong was the first man to set foot on the Moon, followed by Buzz Aldrin.
- g. The first spacecraft to be sent to the Moon from India is Chandrayaan-I, on 14<sup>th</sup> November, 2008.

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OUR UNIVERSE

12

The Moon

Answers



Page 115 & 116

- h. The three layers of the Earth are:-  
Core:- This is the innermost part of the Earth. The temperature here is similar to that of the Sun. This layer consists of material that is a mixture of iron and nickel, in a molten or liquid state.  
Mantle:- This layer is present between the core and the crust. It is made up of silicate rocks. The upper layer of the mantle consists of magma.

Crust:- This is the outermost layer, where life exists. It is mainly made up of rocks and soil.

- i. The Earth and the Moon have a gravitational force between them. This gravitational force of the Moon has the ability to pull land and water on Earth. However, this effect is only visible in the water, as tides.
- j. The surface of the Moon is uneven and is made up of rocks. It is covered by a thin layer of soil. It has two kinds of areas. The lighter

\* These answers may be unique to each student. Teachers may also get an assortment of responses from students based on what they have learnt from the chapter.

## OUR UNIVERSE

12

The Moon

Answers



Page  
115 & 116

area is called the lunar highlands and the darker area is called the Maria, which is at a lower level than the highlands.

If water was available on the Moon, the Maria would form the water bodies. Apart from this, there are large circular shaped depressions called craters, formed due to the meteorites crashing on the surface of the Moon. There is no atmosphere and no air on the

Moon. It gets heated up quickly and does not experience any weather changes. Sound needs air to travel, hence there is no sound on the Moon.

The surface of the Moon experiences vibrations, caused due to internal changes, called moonquakes.

k. **New moon:-** When the Moon is between the Earth and the Sun, the reflected light is not seen on the Earth and hence, we do not see the moon on 'new moon day'.

**Crescent Moon:-** As the Moon moves

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## OUR UNIVERSE

12

The Moon

Answers



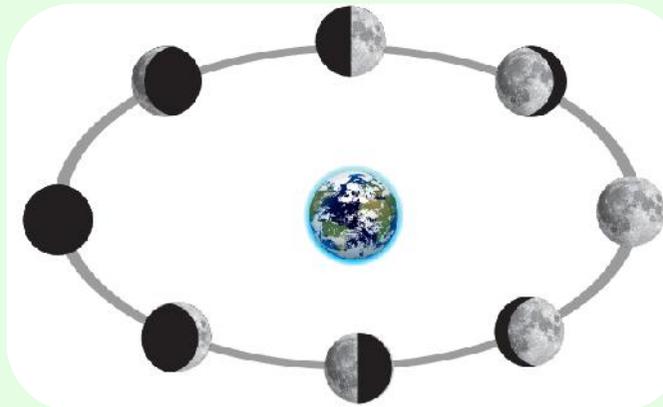
Page  
115 & 116

aside from the Sun, it reflects the light of the Sun, such that only a small part of it is visible. Hence, we see the Moon as a thin, crescent-shaped strip.

**Half moon:-** When only half of the Moon is visible and the other half is dark, it is called a half moon.

**Gibbous moon:-** The reflected light falls on  $3/4^{\text{th}}$  of the Moon, making the remaining, smaller part invisible.

**Full moon:-** When the Earth is between the Sun and the Moon, the Moon reflects light from the entire side of it that is visible from Earth.



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## OUR UNIVERSE

12

The Moon

Answers



Page  
115 & 116

l. Artificial satellites are useful to us as they take pictures of different places on the Earth, send reports on the climatic conditions, etc. We can watch live television and matches with the help of the satellites.

m. When an opaque object obstructs the path of light, a shadow is formed. An opaque object is anything that does not allow light to pass through. The length of the shadow depends upon the position of the source of light.

n. When the Moon comes directly between the Sun and the Earth, its shadow falls on the Earth, completely covering the Sun. This is known as a solar eclipse.

When the Earth comes in between the Sun and the Moon, the Earth completely covers the Moon and the shadow of the Earth falls on the Moon. This is known as a lunar eclipse.

2) Give reasons for the following.

a. They are present before the asteroid belt.

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OUR UNIVERSE

12

The Moon

Answers



Page 115 & 116

- b. As the Moon orbits the Earth, the amount of light it reflects is different.
- c. There is no air on the Moon and sound travels on air.
- d. There is no atmosphere on the Moon.
- e. Moon's gravitational force pulls the water from the ocean and seas.

3) Complete the analogy.

- |               |                    |
|---------------|--------------------|
| a. Comets     | b. Outer Planet    |
| c. 365 ¼ days | d. Lunar Highlands |
| e. Moon       | f. Solar Eclipse   |

4) Match the following.

- |                            |            |
|----------------------------|------------|
| a. Neil Armstrong          | Apollo 11  |
| b. Revolution of the Earth | 365 ¼ days |
| c. Rotation of the Earth   | 24 hours   |
| d. Solar System            | 8 planets  |
| e. Rotation of the Moon    | 27 days    |

5) State whether true or false.

- a. False
- b. False
- c. True
- d. False
- e. True

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# Chapter Summaries

## FORCE, WORK AND MACHINES

13

### Force, Work and Energy

This chapter talks about force, energy and their various forms. The chapter also talks about conservation of energy and a new concept of hydroelectric energy.

14

### Simple Machines

The chapter elaborates upon the concept of simple machines in detail and talks about the basic types of simple machines and their sub-classifications.

## FORCE, WORK AND MACHINES

13

Force, Work and  
Energy

( Answers )

**DO** Page  
**THIS** 119

- i) Push away from ourselves.
- ii) Pull towards ourselves.



Page  
123

- 1) Answer the following questions in your notebook.
  - a. The push or pull used to cause a movement in objects is known as force. It is an external effort put on objects to obtain a particular

- change. Different kinds of force are:-
  - Gravitational force
  - Magnetic force
  - Frictional force
  - Electrostatic force
- b. A magnetic field is an area around every magnet, within which, the magnetic force is active.

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## FORCE, WORK AND MACHINES

13

Force, Work and Energy

Answers



Page 123

- c. Work and energy are related as we need energy to do any work. The ability to do work is called energy.
- d. Kinetic energy is the energy contained in objects which are in motion.
- e. When a magnet is placed near iron, the magnet exerts force on the iron and can pull the iron, when it is within the magnetic field. This is how magnetic force works.
- f. Potential energy is the energy stored in objects which are not in motion whereas, kinetic energy is the energy that an object has once it is in motion.
- g. When a ball and a surface come in contact with each other, there is frictional force exerted from both sides. There is force exerted by the ball on the surface, hence it is able to move.
- h. When we are cooking food, we can cover the utensils in order to preserve heat.
- To conserve electricity, we can use energy efficient bulbs.

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## FORCE, WORK AND MACHINES

13

Force, Work and Energy

Answers



Page 123

- We can switch off fans and lights when we are not in the room.
  - Light can be switched off during the daytime.
  - We can walk to shorter distances instead of using a car or a motorcycle.
- 2) What happens in the following situations?
- a. Heat energy is produced.
  - b. The iron piece will get pulled towards the magnet due to magnetic force.
- c. Electrostatic force will be created.
- d. The ball will come back to ground due to gravitational force.
- 3) Choose the correct answer.
- a. Gravity
  - b. Friction
  - c. Atoms
  - d. Energy
  - e. Light energy

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## FORCE, WORK AND MACHINES

14

Simple Machines

Answers



Page  
131

- 1) Answer the following questions in a sentence.
- a. Everything we do requires the use of a machine. Machines are required by us as we are dependent on them to do work.
  - b. Machines which consist of a few parts and make use of energy to do work, are called simple machines. Examples:- screw, lever, pulley, etc.
  - c. An effort is the force applied to an object.
  - d. They are used to fix parts of machines and hold them together. They are also used on door hinges to attach doors to the wall. Screws are used in furniture as well.
  - e. A pulley consists of a wheel with a groove on its outer edges. A rope or chain is passed through the groove which holds it firmly.
  - f. A wedge is a simple machine that is triangular in shape. It is sharp at one end and becomes broader as it goes towards the other end.

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## FORCE, WORK AND MACHINES

14

Simple Machines

Answers



Page  
131 & 132

2) Answer the following questions in your notebook.

a. A lever is a simple machine that consists of three parts- effort, load and fulcrum.

**First order levers:-** When the fulcrum is present in between the load and the effort, it is a first order lever.

**Second order levers:-** The load being present in between the fulcrum and the effort, forms the second order lever.

**Third order levers:-** When the effort is present in between the load and the fulcrum, it is called the third order lever.

b. A pulley can be used to draw water from the well. One end of the rope or chain will be tied to the bucket, while the other end will be controlled by hands. The wheel of the pulley is used to first lower the bucket into the well and then, to lift it back up. The pulley is fixed to an axle so that it becomes easy to control the rope or the chain.

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## FORCE, WORK AND MACHINES

14

Simple Machines

Answers



Page  
131 & 132

- c. When an inclined plane is wound around a long cylindrical rod, grooves are formed by the edges of the plane. This is a screw.
- d. A wheel cannot rotate on its own for a long distance. An axle helps by making the wheel go longer distances. An axle is attached to the centre of the wheel and it controls the movement of the wheels. When the axle is pushed, both the wheel and axle rotate together.
- e. Wheels are an important invention for mankind. Before the wheels were invented, people made sledges and used it to drag, push or lift loads. Then, people started using logs as rollers and placed the sledges on top of the logs. However, logs would sometimes slip and couldn't be used for long distances. Hence, people tied the logs together, making it easier to roll them. Slowly, the centre of the logs were carved out, to make them look like a wheel and axle.

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**FORCE, WORK AND MACHINES**

14

Simple Machines

Answers



Page 131 & 132

As years passed, wheels with spokes were created. When metals were extracted, wheels were made out of them. Today, we have wheels made out of different metals, rubber, etc.

3) Fill in the blanks.

- a. Simple
- b. Load, fulcrum
- c. Pulley
- d. Screws
- e. Wedge
- f. Axle

4) Give two examples of places where you see these simple machines used.

- a. Pulley:- To draw water from wells, clothes' line

- b. Inclined plane:- Flyover, ramp or a driveway
- c. Screw:- Machines, furniture
- d. Wheel and axle:- Cars, bullock carts
- e. Lever:- Hammer, bottle opener

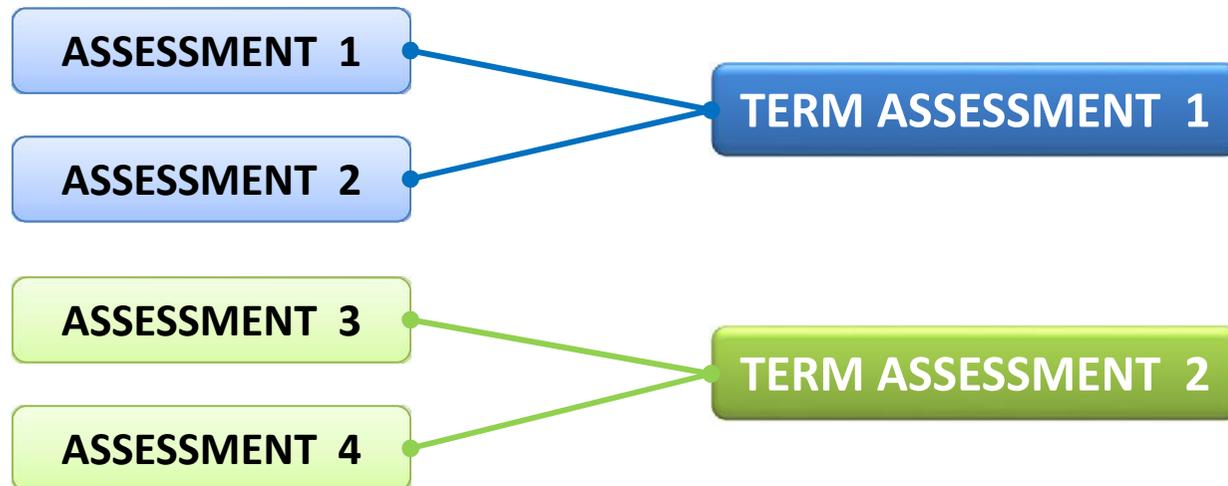
5) Match the following.

- |                  |   |                    |
|------------------|---|--------------------|
| a. Screw         | → | Pulley             |
| b. Fulcrum       | → | Axle               |
| c. Wheel         | → | Second order lever |
| d. Bottle opener | → | Inclined Plane     |
| e. Clothes' Line | → | Lever              |

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# Evaluation

The evaluation sheets are divided into four assessment papers and two term papers, to be given during the academic year.



*These assessment sheets can be accessed on the 'Downloads' link on the Greycaps website [[www.greycaps.com](http://www.greycaps.com)]*

## 'DOWNLOADS' Link

This link provides access to assessment sheets and this teacher manual, to all teachers subscribed to Voyager.



Each assessment sheet is downloadable in a PDF format and is accompanied with the answer keys.

Each PDF file is password protected for the teachers' benefit.

The password is 'teacher'.

# Evaluation

The units covered for each assessment sheet are as follows :-

|              |  |                   |
|--------------|--|-------------------|
| ASSESSMENT 1 | The Living System   Human Body and Organ Systems             | TERM ASSESSMENT 1 |
| ASSESSMENT 2 | Human Body and Organ Systems   Health, Hygiene and First Aid |                   |
| ASSESSMENT 3 | Rocks, Soil and Minerals   Air, Water and the Environment    | TERM ASSESSMENT 2 |
| ASSESSMENT 4 | Our Universe   Force, Work and Machines                      |                   |

# Benefits

- Easy to recall, longer retention
- Fun, team based and experiential
- Makes the child THINK & QUESTION (No rote)
- Reduces the gap between the first child and last child (i.e; Honeycomb Philosophy)



We thank you for being a teacher.



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