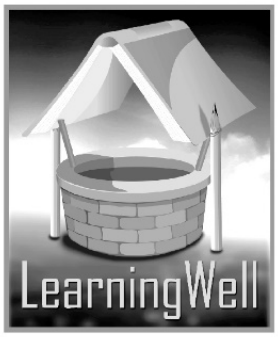

LearningWell's Science

5

Teacher's Resource Book

For Order : 0320-5899031

info@learningwell.pk www.learningwell.pk

Table of Content

Lesson 1: Branches of Science: Major of Major

Time required: **180 minutes** or **3 hours** with Activity book and revision of the lesson.

Start this lesson in progression with the lesson "Science and its fields".

Aim of the lesson:

We explained science and its major fields in grade 3 and 4. . This time we aim to bring their understanding towards diversity in branches of science. They will be able to identify major areas of science according to the area of study.

Learning objectives:

In this lesson students will be able to understand:

- Branches of science; zoology, botany, microbiology, physical chemistry, biochemistry, organic chemistry, electromagnetic, mechanics, optics
- Characteristics of each branch.
- Inventions of science in their fields.

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

- **The Net Extra.**

  Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information. Log on to net extra account at *www.learningwell.pk*

- **Other links:**

  Besides the Net Extra, here we mention links to other sites also which are **educational kids conceptual videos and activities** for elementary students to learn on the web.

  Visit:

https://www.google.com.pk/webhp?hl=en#hl=en&q=sub+branches+of+science
https://www.google.com.pk/webhp?hl=en#hl=en&q=major+fields+of+science

Before you start a lesson in a class, give reading task at home of the lesson to your students. This reading task will help them understand the lesson and evaluate their level of understanding through brainstorming exercise.

Warm up:

Warm up or brainstorming is an essential tool of teaching for learning. In a class, ask different questions to know the existing information of the students. It will help you to focus on what and on whom during the lesson. You ask different questions linking to the main concept to be given of the topic. For example:

- What are three main branches of science?
- What we study in field of biology?
- What we study in field of chemistry?
- What we study in field of physics?

Discussion:

As your students are now curious and ready to understand, give them the actual concept connecting their correct answers. You should write difficult words and terms of the topic on the board. It will enhance their vocabulary and they will be more familiar with the terms during the lesson.

Your main focus should remain towards the objectives of the lesson. Tell them why we need to classify branches into sub-branches. For example you may say that in biology we study all living things, such as about plants, animals and microorganisms. All these three groups of living things have different characteristics. It means we can group them so we again divide biology into Botany in which we study plants only, zoology in which we study animals only, and microbiology in which we study microorganisms only. Ask your students that if we give you a chance to divide zoology and botany into their sub-groups, how you will make their groups. You give them chance to make different groups on their own. Similarly do for chemistry and physics.

Key words	Common words
Botany	Bacteria
Zoology	Microscope
Microbiology	Viruses
Organic chemistry	Protozoa
Electromagnetic	Potential
Optics	Vision
Mechanics	
Physical chemistry	
Biochemistry	

Summarizing:

Summarize the lesson in points as:

- Biology, physics and chemistry are fundamental branches of science.
- As the world progressed these branches were sub-divided into sub-fields.
- Sub branches of biology include: botany, zoology, microbiology. (Give definition of each branch in points.)

- Chemistry branches into: physical chemistry, organic chemistry and biochemistry. (Give definition of each branch in points.)
- Physics divides into: electromagnetic, mechanics, optics .(Give definition of each branch in points.)

Assessment:

Once you find that students have understood the lesson. You may ask different questions to evaluate their concepts. You may ask:

- Optical physics is the study of?
- Organic chemistry is the study of?
- Tell three inventions of mechanical engineers and their uses in everyday life.
- Who are veterinary physicians?
- Tell the name of animals which are very rare on our planet.
- What we study in biochemistry?

Think and write

1. Science divided into three major branches. But some questions were still unanswered by these basic branches. Due to this reason scientist made further divisions of science.
2. Botany is the study of plants. In this branch we study beneficial and harmful plants are identified.
3. In microbiology we study about microorganisms. Microbiology also helps in creating vaccines that protect us from harmful disease.
4. Physical chemistry is the combination of physics and chemistry. It is the study of characteristics of matter particles. Organic chemistry is the study of carbonic materials. Carbon is the largest existing substance on our planet.
5. Binocular is the part of optical physics. J. P Lemiere invented the first binocular in 1825.

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are week at and what to improve now**.**

For grade 5 students, answers should be simple and not be with complicated grammar structure.

LESSON 2: Scientific Methods

Time required: **180 minutes** or **3 hours** with Activity book exercises and revision of the lesson.

Start this lesson in progression with the lesson "Science".

Aim of the lesson:

The aim of this lesson is to promote the ways which lead to generating scientists of the nation for inventions. This lesson will teach students that how scientists think and carry out different experiments to prove their hypothesis that becomes a theory.

Learning objectives:

In this lesson students will be able to understand:

- Scientific methods; a set of logical steps.

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

- **The Net Extra.**

  Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information. Log on to net extra account at *www.learningwell.pk*

- **Other links:**

  Besides the Net Extra, here we mention links to other sites also which are **educational kids conceptual videos and activities** for elementary students to learn on the web.

  Visit:

https://www.google.com.pk/webhp?hl=en#hl=en&q=scientific+methods
https://www.google.com.pk/search?q=basic+scientific+methods&hl=en&biw=1164&bih=799&site=webhp&source=lnms&sa=X&ved=0ahUKEwjMlbmXx8LLAhXLQBQKHTkJCxgQ_AUIBigA&dpr=1.1#

Before you start a lesson in a class, give reading task at home of the lesson to your students. This reading task will help them understand the lesson and evaluate their level of understanding through brainstorming exercise.

Warm up:

Warm up or brainstorming is an essential tool of teaching for learning. In a class, ask different questions to know the existing information of the students. It will help you to focus on what and on whom during the lesson. You can do the following activity in a class.

Material	State of matter	Colour	Smell	Texture	Will Flow faster (a guess)	Flows faster (a result)

On a wooden plank place soil and a full spoon tomato ketch up. Now tilt the plank so both the materials start moving on it. Record which moves faster. Fill the chart of observation now:

(Note: There are many observations to be done and questions to ask. Engage every student in the activities.)

Discussion:

Humans are curious in nature. They want to know about the things around them. Any observation starts from the question. Like in the above activity, we ask that which material will flow faster. Then there is guess or hypothesis that it may happen. Mostly hypothesis is made after a research or gathering some information. It is just an idea to be proven. To prove the idea, experiments are done as we did in the activity. Once we have the results we record them as a conclusion. All the steps that lead to the conclusions are called scientific methods. It is better to explain the concept through different activities.

Activities given in the end of the lesson and in the activity book are more interactive that will help students to understand the concept more easily.

Key words	Common words
Question Hypothesis Experiments Observation Analysis Conclusions Theory	Scientific methods Research Temperature Thermometer Apparatuses Theory

Summarizing:

Summarize the lesson in points as:

- Scientific method is a set of logical steps.
- Question about anything starts the process.
- During research all possible resources are accessed for the topic.
- Hypothesis is an educated guess.
- Experiments are activities performed and their results observed.
- The observations are analyzed and a conclusion about the hypothesis is passed.
- After testing the hypothesis all possible means, a theory is finally passed.

Assessment:

Test the concepts of your student, once students have understood the lesson. You may ask:

- What are the five scientific methods in order from first to last?
- What skills will scientist use when he listen the sound that whales make.
  making a hypothesis
  making observation
  interpreting data
  drawing conclusions
- In science what we call a scientific guess?
  conclusion
  hypothesis
  observation
  question
- Why it is necessary to conduct a scientific test more than one time?

Think and write

1. Hypothesis is the main idea before any experiment. On the basis of hypothesis, scientists plan experiments to prove their idea.

2. Aristotle the Greek scientist, regarded as the father of science, was the first to realize that knowledge could only be gained by building upon what is already known. Measurement and observation, the foundations upon which science is built, were Aristotle's contribution. He applied his methods to almost everything

3. If the hypothesis is once proved wrong, the process is repeated many times to confirm the results and analysis are made.

4. He should use different methods to check the hypothesis. This process is called analysis. Analysis includes more experiments, ideas and tests.

5. Scientists sometimes have to do many experiments to prove their hypothesis. This repetition gives the confirmed result that leads to conclusion.

6. Theories are constantly being refigured, and new research frequently renders old ideas outdated or incomplete. It was only with the adoption of the scientific method that many of the classical theories like spontaneous generation began to be tested. It was believed that life began spontaneously from the mud or earth when received sunlight. Later, it was proved wrong when maggot appeared on meat and microscope was invented. It was proven that life comes from the life.

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are week at and what to improve now**.**

LESSON 3: Investigating Living Cells

Time required: **360 minutes** or **6 hours** with Activity book and revision of the

Start this lesson in progression with the lesson "Body sciences and "the science of plants".

Aim of the lesson:

The aim of this lesson is to explain that every living body is generated from a minute particle that builds every structure of the body and codes for its every function. They will understand the organelles and their role and also the differences between an animal cell and a plant cell. This lesson will help students able to understand the world of microorganisms in higher grades.

Learning objectives:

In this lesson students will be able to understand:

- Cell, a living unit or a building block of living things
- Animal and plant cell.
- Unicellular and multicellular organisms

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

- **The Net Extra.**

  Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information. Log on to net extra account at *www.learningwell.pk*

- **Other links:**

  Besides the Net Extra, here we mention links to other sites also which are **educational kids conceptual videos and activities** for elementary students to learn on the web.

  Visit:

  https://www.google.com.pk/webhp?hl=en#hl=en&q=living+cells
  https://www.google.com.pk/webhp?hl=en#hl=en&q=investigating+living+cells

Before you start a lesson in a class, give reading task at home of the lesson to your students. This reading task will help them understand the lesson and evaluate their level of understanding through brainstorming exercise.

Warm up:

Warm up or brainstorming is an essential and a successful tool of teaching. Students have already done the re-reading and exercise of the lesson and to connect their uunderstanding you may further ask:

- What is building made up of?
- What is matter?
- What our body is made up of?
- What could be the smallest unit of our body as the smallest unit of a building is a brick?

(Note: There are more questions to ask. Try to involve every student in answering regardless of correct answer.)

Discussion:

As your students are now curious and ready to understand, give them the actual concept connecting their correct answers.

The main objective of the lesson is to give the concept of living unit hat codes for every structure and function of the living things. Once they understand that as a building is made up many bricks that combine together to make walls, rooms and the whole building, similarly a cell makes up a whole body when combines together to form a tissues like walls, which combine together to form a n organ like a room which combine together to form the organ system and a whole body like a building. Tell the how an animal cell and a plant cell are different from each other. The only difference is the presence of cell wall and chloroplast in a plant cell that animal cell lacks. The table of differences in a textbook will help to see the differences and similarities.

Once they understand the differences at the level of organelles, tell them about unicellular organisms (single celled) and multicellular organisms. The definition is hidden in their names.

You should write difficult words and terms of the topic on the board. It will enhance their vocabulary and they will be more familiar with the terms during the lesson.

Key words	**Common words**
Organelles Cell wall Cell membrane Cytoplasm Vacuole Mitochondria Chloroplast Nucleus Euglena Amoeba Unicellular Multicellular	Structural Nutrition Reproduction Respiration Excretion Microscope

Summarizing:

Summarize the lesson in points as:

- Cell is the smallest unit that codes for every structure or function of the animal or plants body.
- Organelles are the internal parts of the animal and a plant cell.
- Plant cell and an animal cell have some differences. Plant cell has chloroplast which gives green colour to the plant and also helps in photosynthesis and a cell wall which gives rigidity to the plants.
- Unicellular organisms are only single celled, such as euglena and multicellular organisms have more than two cells to billion of cells in a body, such as starfish, humans.

Assessment:

Test the concepts of your student, once students have understood the lesson. You may ask:

- What is a jelly like substance in a cell called?
- Why plant's body is rigid than that of animal's?
- What is the part of a plant cell that gives it a regular shape to it?
- Name four organelles of animal cell.
- Which organelle helps plants to make its food?

There are more questions to be asked.

Interpreting
Think and write

1. Cell is living body as it performs all function as living things do, such as breathing, excreting, respiring, reproducing, taking energy for the functions, etc.
2. RBCs do not have nucleus. Hence they do not divide or replicate like other cells.
3. Animal body's is softer than plants because they do not have cell wall on the outer surface of their cell. Plant cell have cell wall that provides rigidity and a definite shape to the plants.
4. Animal cells do not have chloroplast in their body. Chloroplast carries out photosynthesis in plants. The lack of this chloroplast in animals' cells, animals are unable to make their own food.

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are weak at and what to improve now**.**

LESSON 4: Microorganisms

Time required: **360 minutes** or **6 hours** with Activity book and revision of the lesson.

Start this lesson in continuation with the lesson "Investigating living cells".

Aim of the lesson:

Microorganisms play very important role in our lives. Some`` b are very beneficial but some are disease causing. The aim of this lesson is to give students awareness of some microorganisms that could be normal flora, helping or pathogens.

Learning objectives:

In this lesson students will be able to understand:

- Microorganisms
- Pathogens and normal flora
- Types of microorganisms.
- Characteristics of microorganisms.
- Prevention and cure of some diseases caused by some common pathogens

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

- **The Net Extra.**

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- **Other links:**

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  Visit:

https://www.google.com.pk/webhp?hl=en#hl=en&q=microorganisms
https://www.google.com.pk/webhp?hl=en#hl=en&q=types+of+microorganisms

Before you start a lesson in a class, give reading task at home of the lesson to your students. This reading task will help them understand the lesson and evaluate their level of understanding through brainstorming exercise.

Warm up:

They have done pre-reading and the brainstorming exercise in the textbook. Now you may ask:

- Do you see green fungus on bread?
- Do you see green algae around any stagnant water bodies or on rock near sea shore?(Kaayee in urdu)
- Are all bacteria bad for us? What about cheese or yogurt or yeast?

(Note: There are more questions to ask. Try to involve every student in answering regardless of correct answer.)

Discussion:

As your students are now curious and ready to understand, give them the actual concept connecting their correct answers.

You should discuss that some living things are so small that we cannot see them without microscope. These are called microorganisms (micro=very small). You may give examples of germs they hear a lot about them. Germs may bacteria or viruses. They also have seen fungus and algae. It is better you show their pictures so they can differentiate them easily.

Here your focus should be towards key terms of the lesson such as bacteria, virus, protozoa, fungi, normal flora and the pathogens. Tell them their difference and the effects they cause.

Once they have understood the lesson, you should tell them about the preventions and cure of the diseases caused by pathogens. Keep the hygiene practices in school too.

You should write difficult words and terms of the topic on the board. It will enhance their vocabulary and they will be more familiar with the terms during the lesson.

Key words	Common words
Micro-organisms	Spherical
Bacteria	Diseases
Viruses	Infections
Fungi	Measles
Protozoa	Influenza
Algae	Sewage
Normal flora	Vaccination
Pathogens	Stale food

Summarizing:

Summarize the lesson in points as:

- Micro-organisms or microbes are very tiny living organisms. We can only observe them using a microscope.
- Bacteria, viruses, protozoa, fungi and algae are all examples of micro-organisms.
- Disease causing microbes are known as pathogens.
- Viruses are never beneficial for living beings. They cause illnesses and various diseases.
- We should take preventive measures against pathogens.
- Not all microbes are dangerous. Certain micro-organisms help us in many ways

Assessment:

Test the concepts of your student, once students have understood the lesson. You may ask:

- Which of the following are not microorganisms?
  - ❖ Ants
  - ❖ Bacteria
  - ❖ Mould
  - ❖ Yeast
- Which type of microorganism is used in making pizza dough or cheese?
- Which type of microorganism is useful for our sewage line?
- Which is the smallest microorganism that causes diseases?
- How do microorganisms enter our body?
- Where do we probably find bacteria?
-

Think and write

1. Bacteria and viruses are so small that we cannot see bacteria and viruses without microscope. Hence they are called microorganisms.
2. Bacteria live everywhere. Viruses live inside the bacteria. Bacteria can be harmful and beneficial. Viruses are always harmful. Viruses are smaller than the bacteria.
3. Some microorganisms are useful for us, such as normal flora and decomposing bacteria. Some bacteria are used in making some food items like cheese, pizza dough and yogurt.
4. If we do not wash hand after gardening, the mud bacteria may enter our body through food we eat.
5. These bacteria are called normal flora that live in or on our body. Normal flora help us fight the diseases.

6. Protozoa are useful in treatment of sewage line. They eat all harmful bacteria of sewage and make it clean.
7. They are called normal flora. They are useful for our body they fight against harmful diseases which attacks on our body.
8. All fungi and algae are not microorganisms. They vary in number of cells and hence in size.
9. Vaccination is the process that stimulates our defense or immune system against harmful disease. It prevents us from harmful diseases, such as malaria, small pox, tuberculosis, etc.

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are week at and what to improve now**.**

LESSON 5: Brain: The Control Panel

Time required: **360 minutes** or **6 hours** with Activity book and revision of the lesson.

Start this lesson in continuation with the lesson "Organ system".

Aim of the lesson:

This time students should know how our brain coordinates with different body systems. They will know brain controls the functions of our every part of the body. This makes brain central controlling unit of the body.

Learning objectives:

In this lesson students will be able to understand:

- Brain controls whole body.
- Structure of brain.
- Parts of brain.
- Functions of brain.

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

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- **Other links:**

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  Visit:

https://www.google.com.pk/webhp?hl=en#hl=en&q=human+brain
https://www.google.com.pk/webhp?hl=en#hl=en&q=human+brain+the+control+panel

Before you start a lesson in a class, give reading task at home of the lesson to your students. This reading task will help them understand the lesson and evaluate their level of understanding through brainstorming exercise.

Warm up:

Warm up or brainstorming is an essential tool of teaching for learning. In a class, ask different questions to know the existing information of the students. It will help you to focus on what and on whom during the lesson. You can bundle of friendly questions, related to healthy habits,

such as,

- What do you think why brain is necessary for our body?
- Which dry fruit resembles structure of brain?

(Note: There are more questions to ask. Try to involve every student in answering regardless of correct answer.)

Discussion:

As your students are now curious and ready to understand, give them the actual concept connecting their correct answers.
It is good if you give the demonstration of **Cerebrum**, **cerebellum** and **brain stem.**
Cerebrum:

- The biggest upper region of the brain.
- Receives information.
- **Interprets** the information
- Takes decisions
- Deals with speaking, thinking, feeling, answering, etc.

Cerebellum

- Deals with all the body **balance, movement** and **coordination**.
- Present at the lower side of the brain.
- Perform multiple actions at a time.

Medulla

- Located anterior to the cerebellum.
- Deals with all autonomic or **involuntary actions**, such as heart beat, blood pressure, breathing, etc.

Brain stem

- Links the spinal cord with the brain.
- Small mass of tissues that let neurons reach to brain and from brain to different parts of the body.
- Carries out different **involuntary actions.**

Spinal Cord

- Runs down from our brain to our lower back.
- Protected by bone segments called **vertebrae**.
- The tiny nerves which are spread all over the body are connected to the brain via the spinal cord.

You should write difficult words and terms of the topic on the board. It will enhance their vocabulary and they will be more familiar with the terms during the lesson.

Key words	Common words
neurons	transmitters
cerebrum	membranes
cerebellum	voluntary
medulla	involutary
spinal cord	autonomic
brain stem	memorize

Summarizing:

Summarize the lesson in points as:

- Brain is the command and control centre of the body.
- Brain is the central organ of the nervous system.
- Brain has three major parts; cerebellum, cerebrum and brain stem.
- Nerves are tiny wire-like channels which send signals from all over the body to the brain through the spinal cord.
- Each part of a brain is responsible for different tasks that our body performs.
- Cerebrum deals with the voluntary actions of the body.
- Cerebellum deals with balance, movement and coordination of the body.
- Medulla and brain stem also deal with the involuntary actions of the body.

Assessment:

Test the concepts of your student, once students have understood the lesson. You may ask:

- Which system of our body controls all the functions?
- What are the major parts of nervous system?
- Which is the biggest part of the brain?
- What is the job of brain stem?

Interpreting

Think and write (Preferred student's answer)

- Skull is the uppermost part the brain. It is made up of very hard bone. It provides protection to our brain.
- Cerebrum is the part of brain that identifies the smells of different things.
- Brain controls are voluntary functions like speaking, thinking, etc. it also controls our involuntary functions like our heart beat, blood pressure, breathing, etc.
- Neurons are very essential for our nervous system. They work as a transmitter. They transfer information to the brain. If they do not transfer information our brain will stop working.
- Cerebellum is the part that joints brain to the network.

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are week at and what to improve now**.**

LESSON 6: STOMACH THE DIGESTIVE SYSTEM

Time required: **360 minutes** or **6 hours** with Activity book and revision of the lesson.

Start this lesson with the progression of previous grade.

Aim of the lesson:

In this lesson students will understand the steps of digestion and the organs involve in it.

Learning objectives:

In this lesson students will be able to understand:

- How we get energy from food?
- Process of digestion.
- Organs that involve digestive system..
- Digestion disorders.

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

- **The Net Extra.**

  Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information. Log on to net extra account at *www.learningwell.pk*

- **Other links:**

  Besides the Net Extra, here we mention links to other sites also which are **educational kids conceptual videos and activities** for elementary students to learn on the web.
  Visit:

  http://kidshealth.org/en/kids/digestive-system.html
  http://kidshealth.org/en/kids/digestive-system.html

Before you start a lesson in a class, give reading task of the lesson in homework to your students. This reading task will help them understand the lesson. It will also help them realize the importance of pre-reading.

Warm up:

Warm up or brainstorming is an essential tool of teaching for learning. In a class, ask different questions to know the existing information of the students. It will help you to focus on what and on whom during the lesson. You can bundle of friendly questions, related to healthy habits,

such as,

- You already know that car need fuel to run. Which type of energy do we need to run?
- How we eat food?
- Do you ever feel stomach ache? Anyone know why it happen?

(Note: There are more questions to ask. Try to involve every student in answering regardless of correct answer.)

Discussion:

Students should know that every living thing needs energy to survive. They get this energy for food. Tell them which type of energy human need.

Digestive system plays a vital role in food digestion. **Chewing** is the first step in this process the food breaks down into small pieces and enzymes make it easy to **swallow** and soft. From mouth food goes to **stomach**. **Stomach** is like a sack, it convert food into a liquid mixture and passes it to the **small intestine**. Food goes to **large intestine** from small intestine. **Large intestine** absorbs salt and water and passes the mixture to the rectum. Rectum is the last part of large intestine. the waste product or left over from food is excreted from rectum. (For more step by step details see book)

Digestive disorder

Eating unhealthy food or over eating results digestive disorder or diarrhea, vomiting, stomach ache etc. Balance, and healthy diet, taking meal on time keep us healthy, energetic and fit. Less water intake also cause constipation that is also a digestive disorder.

Key words	Common words
enzymes esophagus macronutrients small intestine large intestine rectum	chewing swallowing diarrhea constipation

Summarizing:

Summarize the lesson in points as mentioned in ***check if you know now.***

- Food provides us energy when it is converted into its simpler form.
- Digestion is a process in which energy from food is absorbed in the body.
- Substances which are not required are expelled out from the body.
- Stomach starts actual digestion. It breaks down food and converts it into liquid food.
- Liver and pancreas secrete certain enzymes which break down carbohydrates, proteins and fats of the food.
- Small intestine extracts vitamins and minerals from the food and supply to bloodstream.
- Large intestine expels the waste from the body.

Assessment:

Test the concepts of your student, once students have understood the lesson. You may ask:

- Which system of our body digests food for the body?
- Which organs are involved in digestive system?
- Which is the first step of digestive system?
- What do you understand by digestive disorder?

Interpreting

Think and write

1. Food that we eat is needed to be converted into simpler form because it absorbs easily in the body.
2. Enzymes and chemicals are necessary for digestion because it make food soft and soluble.
3. If there is no saliva in our mouth we cannot chew and swallow food.
4. If we don't have small intestine, all the nutrients that our body need cannot be absorbed.
5. Prefer student's answer.
6. Yes it is very important.
7. It is stomach. It mix and bland the food into a liquid mixture.

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are weak at and what to improve now.

For grade 2 students, answers should be simple and not be with complicated grammar structure.

LESSON 7: RESPIRATION AND THE RESPIRATORY SYSTEM

Time required: **360 minutes** or **6 hours** with Activity book and revision of the lesson.

Start this lesson with the progression of previous grade.

Aim of the lesson:

The aim of this lesson is to make students understand that we breathe through a process called respiration and how respiration takes place.

Learning objectives:

In this lesson students will be able to understand:

- Process of respiration.
- Know about respiratory organs and their function.
- Respiratory disorders and precautions.

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

- **The Net Extra.**

  Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information. Log on to net extra account at *www.learningwell.pk*

- **Other links:**

  Besides the Net Extra, here we mention links to other sites also which are **educational kids conceptual videos and activities** for elementary students to learn on the web.
  Visit:

  https://www.reference.com/science/respiration-important-living-things-36f3808aa197129b
  http://www.ducksters.com/science/breathing.php

Before you start a lesson in a class, give reading task of the lesson in homework to your students. This reading task will help them understand the lesson. It will also help them realize the importance of pre-reading.

Warm up:

Warm up or brainstorming is an essential tool of teaching for learning. In a class, ask different questions to know the existing information of the students. It will help you to focus on what and on whom during the lesson. You can bundle of friendly questions, related to healthy habits, such as,

- What is that everyone doing all the day anywhere, no matter either you sleep or awake?
- What happen if there is no air around us?
- What is the main characteristic of a living thing?
- How can you define the word "breathe"?
- Why we use our nose and mouth?

(Note: There are more questions to ask. Try to involve every student in answering regardless of correct answer.)

Discussion:

Teacher should have the poster or chart of different organs and paste or hang these images when describe function of it.

Respiration starts when we take in air from our nose and mouth. From nose air passes through trachea (also called wind pipe. It is a pipe like organ between our throat or lungs. Basically trachea divided into two branches that is called bronchi which leads to our both lungs and further divided into number of thin branches called bronchioles.

Our lungs are spongy because of alveoli, on which lungs consist of. Alveoli are tiny air sacs. These air sacs provide oxygen to blood in our body and absorb carbon dioxide from the veins and capillaries.
(Explain in detail with the help of book.)

We all need fresh air to breathe. But daily we face environmental pollution. Air around us polluted with vehicle's smoke, smoke from factories, garbage burn on daily bases is also polluted our environment. All these pollutions in air are caused Respiratory Disorder.
(Explain more from book.)

Diaphragm is a muscular sheet between thorax and abdomen and separates our thorax from abdomen. It plays an important role in breathing.

Normally we breathe in and out 15 to 25 times in a minute.

Key words	Common words
trachea	inhale
wind pipe	exhale
bronchi	breathe
bronchioles	pllution
sputum	lungs
alveoli	mixture
capillaries	branches
diaphragm	

Summarizing:

Summarize the lesson in points as mentioned in ***check if you know now.***

- Oxygen is essential for respiration and proper functioning of the body.
- Respiratory organs make up the respiratory system of the body.
- Respiratory organs involve mouth, trachea, bronchus, bronchioles and alveoli.
- Trachea carries air to the bronchi for lungs.
- Alveoli are the air sacs where actual exchange of gases takes place.
- Bronchioles are the tiny branches of bronchus.
- Diaphragm separates lungs from the abdomen.
- Air pollutants and smoking are hazardous for our lungs.

Assessment:

Test the concepts of your student, once students have understood the lesson. You may ask:

- What is air?
- Air consists of what?
- Can a human survive without breathing?
- What we inhale and exhale when we breathe?
- Name all the respiratory organs?
- From which organs we should inhale oxygen and exhale carbon dioxide?
- What is the function of tiny hairs in our nose?
- Which are the two points where germs we take in from air are trap?
- What are capillary and what it carries?
- How can we prevent respiratory disorders?

Interpreting

Think and write

1. We need oxygen for our survival because it is necessary for proper function of our body.
2. Lungs are consist of alveoli (tiny air sacs) which is filled with air that why lungs look like spongy and heavy.
3. When capillaries supply blood to the alveoli and exchange of oxygen and carbon dioxide take place.
4. Treacle or wind pipe is divided into two branches. Each branch is called bronchi. Each bronchi is further divided into tiny branches called bronchioles.
5. Cigarette smoke and air pollution damage cilia in trachea which traps dirt or chemical from the air we inhale, which is harmful for our lungs. lungs get effected by this impure air or chemical and damage walls of alveoli. So we cannot breathe properly and our body get weak gradually.
6. Prefer student's answer.

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are weak at and what to improve now**.**

For grade 2 students, answers should be simple and not be with complicated grammar structure.

LESSON 8: **HEART AND THE CIRCULATORY SYSTEM**

Time required: **180 minutes** or **3 hours** with Activity book and revision of the

Start this lesson in progression with the previously given concept of healthy diet.

Aim of the lesson:

The aim of this lesson is to understand the circulatory system of human body, how blood survive in our body and give us energy.

Learning objectives:

In this lesson students will know:

- Anatomy of human heart.
- Structure of heart.
- Function of heart.
- Circulatory system.

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

- **The Net Extra.**
  - Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information. Log on to net extra account at
  - *www.learningwell.pk*

- **Other links:**
  - Besides the Net Extra, here we mention links to other sites also which are **educational kids conceptual videos and activities** for elementary students to learn on the web.

    Visit:

    https://www.google.com/search?rct=j&q=human%20heart
    https://www.google.com/search?rct=j&q=circulatorysystem

Before you start a lesson in a class, give reading task of the lesson in homework to your students a day before. This reading task will help them understand the lesson. It will also help them realize the importance of pre-reading.

Warm up:

It's time to plough. Before you start a lesson, do brain storming of students to let them enthusiastically involve in creative thinking and thus in active learning. You may start up with a bunch of questions, e.g.

- Do you know what is circulatory system?
- Which organ helps in pumping blood to whole body?
- Do you know what will happen if blood circulation will stop in our body?

(Note: There are more questions to ask. Try to involve every student in answering regardless of correct answer.)

Discussion:

As your students are now curios about the parts and organs of human body and ready to understand the system of human body.

In this lesson, students will know about the structure, formation and function of heart. Tell them about pulse rate, how our heart pumps and how many times it pumps in a minute. Describe them the **Circulatory System,** tell them it consist of heart and blood vessels. Tell them difference between oxygenated blood and deoxygenated blood. How blood circulates in our body and what happens when this circulation stops.

The anatomy in the book will help them to understand the four main chambers of heart, two upper atria and two lower ventricles.

In class, let the students read the lesson aloud and underline difficult and the key words. Show them the pictures and ask them to explain in words.

Key words	Common words
circulatory system	heart
atria and ventricles	muscles
valves	vigorous
septum	chambers
oxygenated blood	inhibit
deoxygenated blood	vessels
arteries and veins	lower
capillaries	upper
pulse rate	veins

Summary:

Summarize the lesson in points as:

- Heart and vessels make the circulatory system.
- Heart is the main organs that circulate blood throughout the body.
- Heart has two upper atria and two lower ventricles.
- Atria receive blood from the body to the heart and ventricles pump blood from the heart to the body.
- Arties carry oxygenated blood, veins carry deoxygenated blood and capillaries supply blood from the arteries to the tissues and carry blood from the tissues to the veins.
- Pulse rate is the heartbeat in a minute.

Assessment:

Once you find that discussion is completed, test the concepts of your student. You may ask:

- How many chambers our heart has?
- What are the functions of valves?
- Which organ carries deoxygenated blood?
- What are the functions of chambers?
- What are the functions of capillaries?
- What is septum?
- What we called the upper chambers?
- What we called the lower chambers?
- Which organ carries oxygenated blood?
- How many times human heart beats per minute?
- What we called the breast bone?

Think and write (Prefer students' Answers)

1. Prefer students' Answers
2. The heart pumps blood to whole body. Blood carries all the substance we do not need and takes away from us. It keeps our body temperature maintained.
3. Our heart has four chambers two upper are called Atria and two lower are called Ventricles. These chambers are separated by valves. Valves inhibit the back-flow of blood between them.
4. Prefer students' Answers

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are week at and what to improve now.

For grade 5 students, answers should be simple and not be with complicated grammar structure.

Lesson 9: **Life Cycles**

Time required: **180 minutes** or **3 hours** with Activity book and revision of the

Start this lesson in progression with the previously given concept of healthy diet.

Aim of the lesson:

The aim of this lesson is to understand the different stages of life. How a single cell becomes the complete living organism.

Learning objectives:

In this lesson students will know:

- Life cycle of animals.
- Reproduction by single cell.
- Reproduction by two cells.
- Complete Metamorphosis.
- Incomplete Metamorphosis.

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

- **The Net Extra.**
  - Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information. Log on to net extra account at
  - *www.learningwell.pk*
  -
- **Other links:**
  - Besides the Net Extra, here we mention links to other sites also which are **educational kids conceptual videos and activities** for elementary students to learn on the web.

    Visit:

    1. https://www.google.com/search?rct=j&q=animalslifecycle
    2. https://www.google.com/search?rct=j&q=stagesofanimallifecycle

Before you start a lesson in a class, give reading task of the lesson in homework to your students a day before. This reading task will help them understand the lesson. It will also help them realize the importance of pre-reading.

Warm up:

It's time to plough. Before you start a lesson, do brain storming of students to let them enthusiastically involve in creative thinking and thus in active learning. You may start up with a bunch of questions, e.g.

- Anyone know what is life cycle?
- Do you know when a caterpillar grows it becomes?
- What are the four main stages of living things?

(Note: There are more questions to ask. Try to involve every student in answering regardless of correct answer.)

Discussion:

In previous grades, students already know that every living thing possess their life through life cycle.

In this lesson they learn how one organism produces other organism, complete production process.

Reproduction by single cell: In single cell reproduction one parent is used, makes the exactly same copy of its parent and every offspring identical. It usually takes place in plants, microorganisms and lower organisms. In this process parents cell divide into two or more cells like, then four then eight and so on. All single cell reproduction has uniform features.

Reproduction by combination of two cells: In combination of two cells reproduction, one male sperm and one female sperm egg combines together. They combine together and form **Zygote**. This zygote supports the characteristics of both parents and produces a new organism but that is not exact copy of its parents, their offspring are not identical.

Once they understand the reproduction process tell them about **Metamorphosis** process, that how some animals and insects change their physical appearances and transform into new physical structure when they become adult. Describe them what is complete and what is incomplete metamorphosis.

Activities of lesson will also help them in understanding life cycle.

In class, let the students read the lesson aloud and underline difficult and the key words. Show them the pictures and ask them to explain in words.

Key words	Common words
life cycle	cockroaches
animal species	grasshopper
microorganisms	transform
zygote	butterflies
offspring	reptiles
metamorphosis	uniform
chrysalis	characteristics
nymph	combination
termites	growth

Summary:

Summarize the lesson in points as:

- Every living thing passes through its life cycle. It includes birth, growth, reproduction and death.
- Type of reproduction depends mainly upon the types of the living being.
- Single cell reproduction produces completely uniform offspring. It takes place mostly in plants and microorganisms.
- Multi cell reproduction results in a unique offspring, which shares some traits from its both the parents.
- Incomplete metamorphosis is a phase in which certain organisms show only three stages.
- Complete metamorphosis is a phase in which certain organisms show all four stages.

Assessment:

Once you find that discussion is completed, test the concepts of your student. You may ask:

- What we call the baby frog?
- What is complete metamorphosis?
- What is incomplete metamorphosis?
- Name five animals which produce by combination of two cells?
- In which production, the new organism exactly same as its parent?
- Dragonflies, termites, grasshopper and cockroaches are the examples of which metamorphosis?
- Bees, flies, ants and moths are the examples of which metamorphosis?
- What are the three developmental stages of mammals?
- What is zygote?
- In plants, microorganisms and lower organisms take place in which type of reproduction?
- How we can identify a rose plant?

Think and write (Prefer students' Answers)

1. Because they take the characteristics of both parents so they are not exactly the as their parents. (Prefer students' Answers)
2. (Prefer students' Answers)
3. (Prefer students' Answers)

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are week at and what to improve now**.**

For grade 5 students, answers should be simple and not be with complicated grammar structure.

LESSON 10: FLOWRING AND NON-FLOWRING PLANTS

Time required: **360 minutes** or **6 hours** with Activity book and revision of the lesson.

Start this lesson with the progression of previous grade.

Aim of the lesson:

The aim of this lesson is to make students understand the main classification of plants. They also learn about germination of new plant of flowering and non-flowering plant.

Learning objectives:

In this lesson students will be able to understand:

- Flowering and non-flowering plants.
- Germination of new plants.
- Structure of seeds
- Types of seed

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

- **The Net Extra.**

  Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information. Log on to net extra account at *www.learningwell.pk*

- **Other links:**

  Besides the Net Extra, here we mention links to other sites also which are **educational kids conceptual videos and activities** for elementary students to learn on the web.

  Visit:

  http://www.easypacelearning.com/science/plants/plants/1332-plant-classifications-of-flowering-and-non-flowering-plants

  http://www.easypacelearning.com/science/plants/plants/1331-plant-classifications-flowering-and-non-flowering-for-kids

Before you start a lesson in a class, give reading task of the lesson in homework to your students. This reading task will help them understand the lesson. It will also help them realize the importance of pre-reading.

Warm up:
Warm up or brainstorming is an essential tool of teaching for learning. In a class, ask different questions to know the existing information of the students. It will help you to focus on what and on whom during the lesson. You can bundle of friendly questions, related to healthy habits, such as,

- According to the food chain who is the producer?
- What are the different parts of a plant?
- What is germination of plant?
- What happen if there are no plants around us?

(Note: There are more questions to ask. Try to involve every student in answering regardless of correct answer.)

Discussion:

We can classify plants on two groups.

1. Flowering plants 2. Non flowering plants

Non-flowering plants are those plants which do not have flowers. They are further divided into two groups

1. **Seedless plants**: have no seed they have spores to reproduce like fern, algae etc. spores are very light in weight and easily scatter by wind.
2. **Seed bearing plants**: these plants have seeds but these seeds are not enclosed in fruit so it is also called necked seeds. Example of these plants are conifers, pine etc.

Flowering plants: we can daily see here and there different types of flowering plants. flowers produce after fertilization and develop into fruits. Fruits have seeds in it. It is further divided into two grops

Monocotyledonous plant: seeds of these plants have single cotyledon.

Dicotyledonous plants: seed of these plants have two cotyledons.

A seed have three parts:

The outer cover is called **seed coat**.

The food storing part is called **endosperm**.

Baby plant that becomes a new plant is **embryo**.

Explain about stem, leaf and roots of **Monocotyledonous** and **Dicotyledonous** with the help of book.

Key words	Common words
monocotyledon dicotyledon spores gymnosperm angiosperm endosperm embryo xylem and phloem	flowering plants non-flowering plants seedless plants seed bearing plants reproduce

Summarizing:

Summarize the lesson in points as mentioned in ***check if you know now.***

- Seeds enable a plant to reproduce.
- Plants may be flowering and non-flowering.
- Non-flowering plants are also called gymnosperms. Flowering plants are also known as angiosperms.
- Non-flowering plants are further divided into seed-bearing and non-seed bearing plants.
- Seedless plants reproduce by spores. Spores are living cells that have ability to grow a plant.
- Flowering plants are also divided into further types called monocots and dicots.

Assessment:

Test the concepts of your student, once students have understood the lesson. You may ask:

- What are the two main classes of a plant?
- Into how many groups flowering and non-flowering plants are further divided?
- Which types of plants are fern mosses and pine?
- Which types of plants are rose and sunflower?
- How many petals have a dicotyledonous flower?
- How many petals have a monocotyledonous flower?
- Which types of plant have tap roots?
- Which type of plants has fibrous root?
- What are the three parts of a seed?
- What is the difference between the leaf of a monocot and a dicot plant?

Interpreting

Think and write

1. Seed is important for the growth of plant because new plant germinated from the seeds. Seed has embryo which turns into a new plant.
2. Angiosperms are flowering plants while gymnosperms are non-flowering plants.
3. No it will not germinate because if we completely remove the seed coat the embryo will damage.
4. We can decide about a plant that it is dicot or monocot by examine its stem, roots, leaves and flowers.
5. Cones release pollen, this pollen dispersed by wind and fall another cone and reproduce.
6. Flowering plants can be germinated from both types of seeds means monocotyledon and dicotyledon. So we name it monocotyledonous flowering plans and dicotyledonous flowering plants

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are weak at and what to improve now**.**

For grade 2 students, answers should be simple and not be with complicated grammar structure.

LESSON 11: MATTER, MASS & WEIGHT

Time required: **360 minutes** or **6 hours** with Activity book and revision of the lesson.

Start this lesson with the progression of previous grade.

Aim of the lesson:

The aim of this lesson is to make students understand that Earth is a tiny part of universe and universe is all made up of matter. Matter is anything which has mass and occupies some space. The amount of substance in any entity is called mass.

Learning objectives:

In this lesson students will be able to understand:

- What is matter?
- States of matter
- Changes in states of matter
- What is mass and weight?

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

- **The Net Extra.**

  Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information. Log on to net extra account at *www.learningwell.pk*

- **Other links:**

  Besides the Net Extra, here we mention links to other sites also which are **educational kids conceptual videos and activities** for elementary students to learn on the web.

  Visit:

  http://www.thecalculatorsite.com/articles/units/difference-between-mass-and-weight.php

  http://hyperphysics.phy-astr.gsu.edu/hbase/mass.html

Before you start a lesson in a class, give reading task of the lesson in homework to your students. This reading task will help them understand the lesson. It will also help them realize the importance of pre-reading.

Warm up:
Warm up or brainstorming is an essential tool of teaching for learning. In a class, ask different questions to know the existing information of the students. It will help you to focus on what and on whom during the lesson. You can bundle of friendly questions, related to healthy habits, such as,

- What is the difference between mass and weight?
- What state of matter a chair is? Explain your answer.
- What state of matter a cold drink is? Explain your answer.
- Can you measure your weight? How it can be measured?
- Why the weight on Earth is more than that on moon?

(Note: There are more questions to ask. Try to involve every student in answering regardless of correct answer.)

Discussion:

As we know that universe is made up of matter and matter is anything which has mass and occupies some space. Each matter is made up of small particles called atom or molecules. Different objects have different forms of shape and this depends upon the state of matter it belongs to. There are three states of matter that is solid, liquid and gas. In solid matter the particles or molecules are very closely packed together, in liquid these molecules loosely stick to one another and in gases the particles are very far from each other. States of matter can be changed from liquid to solid, solid to liquid or liquid to gas. (Elaborate and explain further with the help of book and activities given in Let's explore)

Key words	Common words
atom or molecules	solid
mass	liquid
matter	gass
particle	weight
gaseous	substance
universe	spring balance
gravity	

Summarizing:

Summarize the lesson in points as mentioned in ***check if you know now.***

- Universe is physical. It can be defined using our senses. Physical things are called matter too.
- Matter is defined as anything that has mass and occupies space.
- Matter has three states; solids, liquids and gas.
- Matter can change from one state to another.
- Mass is the quantity of matter inside a body.

- Mass remains unchanged throughout the universe.
- Weight is a force. It pulls anybody towards the Earth.
- Weight depends upon gravity and mass of a body.
- Weight changes with gravity, so it is not fixed everywhere in the universe.

Assessment:

Test the concepts of your student, once students have understood the lesson. You may ask:

- What is atom?
- What is mass?
- What is matter?
- What is weight?
- What is solid?
- What is liquid?
- What is gas?
- Give some examples of solid, liquid and gas.
- Spring balance is used for what?
- Why solid has a fixed shape but liquid not?

Interpreting

Think and write

1. We cannot see some physical things like oxygen, air and many gases around us with which air is formed.
2. Matter is made up of tiny particles called atom or molecules.
3. Mass is the quantity of atom or molecules present in any object. Mass remains constant everywhere.
4. Mass is a substance and weight is force with which earth pulls any object towards its centre.

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are weak at and what to improve now**.**

For grade 2 students, answers should be simple and not be with complicated grammar structure.

LESSON 12: GREEN HOUSE EFFECT AND THE GLOBAL WARMING

Time required: **180 minutes** or **3 hours** with Activity book and revision of the lesson.

Start this lesson with the progression of previous understanding.

Aim of the lesson:

The aim of this lesson is to make students understand that Earth is covered with air and air is the composition of different gases. These gases are capable of absorbing the heat of sun and not let them escape into the space. These gases are known as greenhouse gases and this effect is called greenhouse effect.

Learning objectives:

In this lesson students will be able to understand:

- What is the purpose of air?
- What are the greenhouse gases?
- What is greenhouse effect?
- How global warming occurs?

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

- **The Net Extra.**

  Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information. Log on to net extra account at *www.learningwell.pk*

- **Other links:**

  Besides the Net Extra, here we mention links to other sites also which are **educational kids conceptual videos and activities** for elementary students to learn on the web.

  Visit:

  http://www.clean-air-kids.org.uk/globalwarming.html

  http://climatekids.nasa.gov/greenhouse-effect/

Before you start a lesson in a class, give reading task of the lesson in homework to your students. This reading task will help them understand the lesson. It will also help them realize the importance of pre-reading.

Warm up:
Warm up or brainstorming is an essential tool of teaching for learning. In a class, ask different questions to know the existing information of the students. It will help you to focus on what and on whom during the lesson. You can bundle of friendly questions, related to healthy habits, such as,

- Why climate changes its behavior?
- How the temperature of earth rises?
- How earth keeps itself warm?
- How pollution is harmful for us?

(Note: There are more questions to ask. Try to involve every student in answering regardless of correct answer.)

Discussion:

Earth is completely wrapped with air which is a composition of some gases which are called greenhouse gases and they absorb the heat of the sun to keep our earth warm. This process has certain effects on earth that is called greenhouse effect. If the balance of these gases disturbed and the amount increases so they start to absorb more heat from sun and the temperature of earth rises above average which cause global warming. Global warming is harmful for crops, animals and for humans also as the climatic conditions get abnormal.

(Elaborate and explain further with the help of book.)

Key words	Common words
greenhouse gases greenhouse effect CFCs global warming carbon dioxide ozone methane nitrous oxide	temperature coastal areas water vapours fuels fumes low-lying

ummarizing:

Summarize the lesson in points as mentioned in ***check if you know now.***

- Greenhouse gases trap the heat of the sun. These gases include Carbon dioxide, nitrous oxide, methane, water vapours and ozone. And the effect is called the greenhouse effect.
- Humans activities are increasing greenhouse gases; CFCs, which are warming the earth gradually. This is called global warming.
- Global warming has its bad effect on climate and the weather, hence on the sea levels, crops and living things.

Assessment:

Test the concepts of your student, once students have understood the lesson. You may ask:

- Name some of the greenhouse gases?
- What is global warming?
- How global warming is harmful?
- What is the purpose of greenhouse gases?
- What human activities produce green house gases?
- What is the role of green house gases?
- What maintain the constant temperature of earth?

Interpreting

Think and write

1. Greenhouse gases are required in a very little quantity because their small amount is capable of absorbing sufficient heat from sun which is needed for suitable living conditions.
2. Humans' activities are major cause of increasing global warming b451ecause these human activities produce different dangerous greenhouse gases known as chlorofluorocarbons or CFCs. Burning fuels, cutting trees and spreading fumes are the example of these activities.
3. Due to global warming the temperature of earth rises above normal and this rise in temperature cause melting of ice and glaciers which is dangerous for people of low-lying coastal areas. Some crops are also badly affected due to global warming.

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are weak at and what to improve now**.**

For grade 2 students, answers should be simple and not be with complicated grammar structure.

LESSON 13: DEEP INTO THE EARTH

Time required: **360 minutes** or **6 hours** with Activity book and revision of the lesson.

Start this lesson with the progression of previous understanding.

Aim of the lesson:

The aim of this lesson is to make students understand that Earth has three main layers that plays major role in its functionality. These are crust, mantle and core.

Learning objectives:

In this lesson students will be able to understand:

- How many layers earth has?
- Importance of the crust layer.
- Function of mantle layer.
- Knowledge about the core layer.

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

- **The Net Extra.**

  Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information. Log on to net extra account at *www.learningwell.pk*

- **Other links:**

  Besides the Net Extra, here we mention links to other sites also which are **educational kids conceptual videos and activities** for elementary students to learn on the web.

  Visit:

  http://www.ducksters.com/science/composition_of_the_earth.php

  https://www.youtube.com/watch?v=bgnn096PfWQ

Before you start a lesson in a class, give reading task of the lesson in homework to your students. This reading task will help them understand the lesson. It will also help them realize the importance of pre-reading.

Warm up:
Warm up or brainstorming is an essential tool of teaching for learning. In a class, ask different questions to know the existing information of the students. It will help you to focus on what and on whom during the lesson. You can bundle of friendly questions, related to healthy habits, such as,

- On which planet we live?
- Is there any other planet on which we can find live except the earth?
- Where on earth do we live?
- Have you ever observed an apricot and its layers while eating?

(Note: There are more questions to ask. Try to involve every student in answering regardless of correct answer.)

Discussion:

We live on the outer most layer of earth that is crust. Sea, mountains, trees, animals and humans are found on the outer most layer of earth only. The second layer of earth is called mantle that is made up of silicate rocks. The third and the last layer of earth is known as core which is composed of inner and outer core. (Explain and elaborate more about the layers of the earth with the help of book)

Key words	Common words
crust mantle core tectonic plates silicon aluminum iron oxygen	Earthquack inner most layer outer most layer volcanic eruption

Summarizing:

Summarize the lesson in points as mentioned in ***check if you know now:***

- Earth is the only planet in the universe where life exists.
- Earth is divided into three main layers.
- Crust is the outer most layer of the Earth. Very large pieces of land are called Tectonic plates.
- Mantle is the next layer after crust. Its temperature is high. The crust floats over the mantle.
- Movement of the molten mantle creates magnetism.
- Core is made up of an inner and outer portion.
- The inner portion of the core is the hottest part of the Earth while the outer one is made.

Assessment:

Test the concepts of your student, once students have understood the lesson. You may ask:

- How many layers earth has, name them?
- What is the importance of outer most layer?
- What do you know about the mantle layer of the earth?
- What is core of the earth, define in detail?
- How magnetism occurs in earth?
- Why the lower portion of tectonic plates is hot?
-

Interpreting

Think and write

1. The crust layer covers the earth on which we live. The mantle layer of earth creates earth's magnetic field. The core layer is made up of inner and outer core from which we can extract nickel and iron.
2. When crust and mantle layer of earth collides with each other the earthquakes occurs.
3. Because of the intense heat from the core the silicate rocks rises and collide with the crust causing volcanic eruption.

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are weak at and what to improve now**.**

For grade 2 students, answers should be simple and not be with complicated grammar structure.

LESSON 14: PLANETS AND THE SOLAR SYSTEM

Time required: **360 minutes** or **6 hours** with Activity book and revision of the lesson.

Start this lesson with the progression of previous grade.

Aim of the lesson:

The aim of this lesson is to make students understand that there is a solar system which holds up all the planets and the moons at the right place. Solar word refers to the sun.

Learning objectives:

In this lesson students will be able to understand:

- What is solar system?
- Planets in our solar system & their names.
- Facts you about the Earth.
- Functioning of Sun.

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

- **The Net Extra.**

  Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information. Log on to net extra account at *www.learningwell.pk*

- **Other links:**

  Besides the Net Extra, here we mention links to other sites also which are **educational kids conceptual videos and activities** for elementary students to learn on the web.

  Visit:

  http://www.planetsforkids.org/

  https://www.youtube.com/watch?v=mQrlgH97v94

Before you start a lesson in a class, give reading task of the lesson in homework to your students. This reading task will help them understand the lesson. It will also help them realize the importance of pre-reading.

Warm up:
Warm up or brainstorming is an essential tool of teaching for learning. In a class, ask different questions to know the existing information of the students. It will help you to focus on what and on whom during the lesson. You can bundle of friendly questions, related to healthy habits, such as,

- Why at day when you go out you feel hot?
- Have you ever looked at the moon closely using a binocular or a zoom lens camera? Give it a try and observe moon.
- How many planets you know by name?
- Where do planets exist?

(Note: There are more questions to ask. Try to involve every student in answering regardless of correct answer.)

Discussion:

There is a solar system in our galaxy which holds up all the planets and moon at the right place, these planets revolve round the sun. Sun is the star at the heart of the solar system. Our solar system has eight planets that are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. Earth is the only planet of the solar system where conditions are most suitable for life.
(Explain in detail about planets and solar system with the help of book)

Key words	Common words
asteroids	Sun
comets	Moon
gravitational force	evolution
solar eclipse	Orbits
lunar eclipse	revolve
phobos and demos	collision
red planet	lumps
dim rings	

Summarizing:

Summarize the lesson in points as mentioned in ***check if you know now:***

- Sun is a star. It's the center of the solar system.
- The Sun, the planets and their moons are all part of the Solar system.
- Sun provides energy to all parts of the Solar system.
- Solar system has a total of eight planets. All the planets revolve around the Sun on imaginary pathways called orbits.
- Mercury is the planet nearest to the Sun.
- Venus is the hottest planet.
- Mars is also called the red planet. It has two moons.

- Jupiter is the biggest planet. It has 4 dim rings around it.
- Saturn is the planet with the brightest rings around it.
- Uranus also has rings around it.
- Neptune is the planet farthest away from the Sun. It has 13 moons and 5 rings.

Assessment:

Test the concepts of your student, once students have understood the lesson. You may ask:

- What is a solar system?
- How many planets are there in our solar system? Name them.
- What is orbit?
- What is Sun? How it functions?
- What do you know about Mercury, Venus, Earth, and Mars?
- What do you know about Jupiter, Saturn, Uranus, and Neptune?
- Define moon. What are carters & how they are formed on moon?
- What is the hottest planet of the solar system?

Interpreting

Think and write

1. Like earth there are other planets too in our galaxy and it tells us that there is a system which holds up all the planets and moons at their right place. This is called Solar system and all the planets revolve round the sun in our solar system.
2. Life is possible only on planet Earth because of the presence of Oxygen and Water within its atmosphere.
3. If sun looses all its light and heat energy then the life on earth will be destroyed and every living thing will die gradually because solar heat and light is very essential for the life on planet earth.
4. Mars is called a Red planet because of its surface color. Its surface is red in color as its soil is made mostly of iron and iron reacts with the atmosphere to produce rust.
5. Uranus and Saturn have rings around them. Saturn has a set of 4 bright rings around it.
6. Venus is the hottest planet of our solar system. This is because its atmosphere is made up of poisonous acidic gases.
7. Jupiter has the greatest number of moons. It has 67 moons.

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are weak at and what to improve now**.**

For grade 2 students, answers should be simple and not be with complicated grammar structure.

LESSON 15: UNDERSTANDING SOUND

Time required: **180 minutes** or **3 hours** with Activity book and revision of the lesson.

Start this lesson with the progression of previous grade.

Aim of the lesson:

The aim of this lesson is to make students understand that what is sound, how it produce and travel. What is vibration and sound waves? Properties of sound.

Learning objectives:

In this lesson students will be able to understand:

- What is sound?
- Sound waves
- Sound and medium
- Properties of sound

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

- **The Net Extra.**

  Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information. Log on to net extra account at *www.learningwell.pk*

- **Other links:**

  Besides the Net Extra, here we mention links to other sites also which are **educational kids conceptual videos and activities** for elementary students to learn on the web.

  Visit:

  http://www.sciencekidsathome.com/science_topics/what_is_sound.html

  http://www.dkfindout.com/uk/science/sound/

  http://www.dkfindout.com/uk/science/sound/how-are-sounds-created/

Before you start a lesson in a class, give reading task of the lesson in homework to your students. This reading task will help them understand the lesson. It will also help them realize the importance of pre-reading.

Warm up:
Warm up or brainstorming is an essential tool of teaching for learning. In a class, ask different questions to know the existing information of the students. It will help you to focus on what and on whom during the lesson. You can bundle of friendly questions, related to healthy habits, such as,

- How many senses do we have?
- How do you understand that what someone saying to you?
- What happen if you close both your ears?
- What do you know about sound?
- How can you differentiate between a good and bad sound?

(Note: There are more questions to ask. Try to involve every student in answering regardless of correct answer.)

Discussion:

Sound is all we hearing / listening. Sound is a form of energy which produces by vibration (something shakes back and forth). When any object vibrates it causes movement of air particles. These particles collide or hit other particles closed to them and made them vibrates too. This movement is called sound waves. This process is going on until the sound waves have speed or energy.

Sound waves need a medium to travel and reach to our ears. This medium can be a solid, liquid or gas. Explain the details given in the book. Then elaborate the properties of sound. Emphasis on frequency when explain, make sure they have clear concept of it.

For batter understanding engage them in the activities given in the book under the heading Let's Explore.

Key words	Common words
loudness pitch echo medium sound waves acoustics pinna eardrum cochlea	pleasant sound unpleasant sound vibration object emerge outer ear impulses

Summarizing:

Summarize the lesson in points as mentioned in ***check if you know now.***

- Sound is a form of energy. It travels in the form of waves.
- Acoustics is the scientific study of sound.
- Sound needs a medium like solid, liquid or gas to travel. Air is a mixture of gases so sound can travel in it.
- Eardrum vibrates when sound waves fall on it.
- Brain receives vibrations from the cochlea in the form of impulses.
- Loudness of sound helps us to differentiate between the sound of a whisper and that of an explosion.
- Pitch depends upon frequency of sound. High-pitched sounds have high frequency and low pitch sounds have low frequency.
- Human ear can detect sounds in the frequency range 20 Hz-20000 Hz.
- We like to hear pleasant/musical sounds while unpleasant sounds or noise are disliked by us.
- Reflection of sound waves from any object is called an echo.

Assessment:

Test the concepts of your student, once students have understood the lesson. You may ask:

- What is vibration of any object?
- What happen when any object vibrate?
- If there is no medium do we hear sound?
- Why travelling of sound weaves need medium?
- What are the properties of sound?
- Which type of sound is harmful for us?
- What are the three portions of our ears?
- What is eardrum?
- What is the outer ear called?
- What is frequency?
- How frequency is measured? Unit of frequency.

Interpreting

Think and write

1. Sounds travels in a medium that can be a solid, a liquid or a gas medium to travel along. There are particles in the medium that helps sound waves to travel from sources to the ears.
2. Male voice is heavier than the female voice because of the difference in the pitch of both voices.
3. Pinna is the outer ear that collects the sound waves which passes through the ear canal to strike ear drum. Same like this a funnel is a tube which is wide at top and narrow at bottom used for guiding liquid or powder into a small opening.
4. Yes, because both the drums produce sound and vibrates when something strikes them.
5. Submarines are able to navigate underwater because of echo.
6. The branch of science which deals with the study of sound is known as "Acoustics".

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are weak at and what to improve now**.**

For grade 2 students, answers should be simple and not be with complicated grammar structure.

LESSON 16: STRIKING LIGHT

Time required: **360 minutes** or **6 hours** with Activity book and revision of the lesson.

Start this lesson with the progression of previous grade.

Aim of the lesson:

The aim of this lesson is to make students understand that how light travel and what happen when light strike any surface and what is reflection and refraction of light.

Learning objectives:

In this lesson students will be able to understand:

- How light travel
- Sources of light
- Properties of light
- Reflection of light
- Refraction of light

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

- **The Net Extra.**

  Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information. Log on to net extra account at *www.learningwell.pk*

- **Other links:**

  Besides the Net Extra, here we mention links to other sites also which are **educational kids conceptual videos and activities** for elementary students to learn on the web.

  Visit:

  http://www.ducksters.com/science/light_spectrum.php

  http://www.online-sciences.com/the-waves/the-regular-reflection-and-irregular-reflection-of-light/

Before you start a lesson in a class, give reading task of the lesson in homework to your students. This reading task will help them understand the lesson. It will also help them realize the importance of pre-reading.

Warm up or brainstorming is an essential tool of teaching for learning. In a class, ask different questions to know the existing information of the students. It will help you to focus on what and on whom during the lesson. You can bundle of friendly questions, related to healthy habits, such as,

- How can we differentiate between day and night?
- What are the natural sources of light?
- What are the artificial sources of light?
- If there is no light what happen?

(Note: There are more questions to ask. Try to involve every student in answering regardless of correct answer.)

Discussion:

First of all ask them about importance of light and know their views. Ask them about uses and natural and artificial sources of light.
Now tell them the properties of light.
Light is energy that travel in **straight line**. It behaves differently when strike any surface. After striking sometime it bounce (turn back) or sometime it absorb (pass through) the surface.
After striking when light turn back this is called **reflection** of light and when it pass through any surface it slightly bend this is called **refraction** of light.
Tell them regular and irregular reflection with the help of book.
For better understanding engage them in the activities given in the book under the heading Let's Explore.

Key words	Common words
reflection of light	bounces
refraction of light	turn back
regular reflection	bend
irregular reflection	lens
	surface

Summarizing:

Summarize the lesson in points as mentioned in ***check if you know now.***

- Light exists all around us. We cannot see anything without it.
- Light is a form of energy which can be converted to other forms of energy too.
- Sources of light emit light rays. These may be natural and artificial sources of light.
- Reflection is the rebounding of light rays from an object.
- Refraction is the bending and change in speed of light travelling through one surface to another.
- Prism splits the white light into seven basic colours.

Assessment:

Test the concepts of your student, once students have understood the lesson. You may ask:

- What is light?
- What do you understand by source of light?
- Which properties of light do you read in this lesson?
- What is reflection of light?
- What is refraction of light?
- What are the two types of reflection?
- What happen when light strike on a rough surface?
- What happen when light strike on a smooth and shiny surface?

Interpreting

Think and write

Light reaches our room during day time even if it does not directly fall inside it because of irregular reflection.

1. When light rays strikes a smooth surface they are reflected parallel and in a fixed direction. This is called as regular reflection and when light falls on uneven/rough surface its gets scattered and spreads in different directions. This is called irregular reflection.
2. The light from any sources falls on different objects. These objects bounce back some of that light. This reflected light enters our eyes and enables us to see that object.
3. We see the colours of rainbow in the sky due to the refraction of sunlight by rain droplets. This occurs because sunlight gets dispersed or broken into a band of seven colours.
4. Light is energy. We can understand it with a practical. On a sunny day take a paper and a magnifying glass. Now rotate the magnifying glasses slowly in your hand such that light fall on the paper. Try to make a small point of sunlight. You will note that the paper begins to burn.
5. Prefer student's answer.

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are weak at and what to improve now.

For grade 2 students, answers should be simple and not be with complicated grammar structure.

LESSON 17: ELECTROMAGNETISM

Time required: **360 minutes** or **6 hours** with Activity book and revision of the lesson.

Start this lesson with the progression of previous grade.

Aim of the lesson:

The aim of this lesson is to make students understand that Electromagnetism is a branch of science in which deals with electricity and magnetism. Simply Electromagnetism is a magnetic field that is produced by a current of electricity

Learning objectives:

In this lesson students will be able to understand:

- Magnetic materials
- Magnetic field
- Types of magnets
- Electromagnetism
- Uses of electromagnetism

Helping tools:

Teacher resource book will give you an ample support in teaching. Further, to prepare you for the lesson, visit the following sites:

- **The Net Extra.**

  Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information. Log on to net extra account at *www.learningwell.pk*

- **Other links:**

  Besides the Net Extra, here we mention links to other sites also which are **educational kids conceptual videos and activities** for elementary students to learn on the web.

  Visit:

  http://www.ducksters.com/science/physics/types_of_electromagnetic_waves.php

  http://www.explainthatstuff.com/electricity.html

Before you start a lesson in a class, give reading task of the lesson in homework to your students. This reading task will help them understand the lesson. It will also help them realize the importance of pre-reading.

Warm up:
Warm up or brainstorming is an essential tool of teaching for learning. In a class, ask different questions to know the existing information of the students. It will help you to focus on what and on whom during the lesson. You can bundle of friendly questions, related to healthy habits, such as,

- Do you play with magnets?
- Name some devices in which magnets are used.
- From where we get electricity in our homes?
- What is battery?
- What is circuit?

(Note: There are more questions to ask. Try to involve every student in answering regardless of correct answer.)

Discussion:

Bring two bar magnets.
First of all ask them about the electricity, its uses and magnets to know their previous understanding.
Tell them magnets have force of attraction and repulsion.

To demonstrate the force of repulsion take two bar magnets and bring them slowly closer to each other. When the north and south poles are aligned the magnets will pull each other and stick together. Now, turn one of the magnets around and repeat the process. This time you see when the same poles are aligned they do not stick and repel each other.

Define them magnetic field as magnets force works on some area around it. The area on which magnetic force applied is called magnetic field. (Explain magnetic field and types of magnets with the help of book)
Tell them as we know that current flows through a path that is called circuit. A circuit has negative and positive terminals. Current flows from positive to negative terminal.
Electromagnetism is the interaction between an electric field and magnetic field. We understand it through an experiment.
(Now perform the experiment as given in book. For this you have to bring a battery, iron nail, wire and paper clips. Show them clearly that how paper clips attached with the nail when current pass through it and what happen when flow of current disconnect.)
Then explain examples of electromagnets by its uses, generator and its uses with the help of book.
For batter understanding engage them in the activities given in the book under the heading
Let's Explore.

Key words	Common words
electromagnetism magnetic field north pole south pole electromagnets magnetism	electricity attraction repulsion generator current

Summarizing:

Summarize the lesson in points as mentioned in ***check if you know now.***

- Magnets are special objects which can attract or repel certain materials.
- The phenomenon is called magnetism.
- The area around a magnet in which exerts a force is called magnetic field.
- Every magnet has a south and a north pole. Like poles repel each other and unlike force attract each other.
- If current passes through a coil of wire it becomes a magnet and called an electromagnet.
- If a magnet passes through a coil of wire, electricity is produced in the wire. This arrangement is called a generator.

Assessment:

Test the concepts of your student, once students have understood the lesson. You may ask:

- What are magnets?
- What is a magnetic field?
- Define mains electricity?
- What happen when electricity pass through a magnet?
- Why magnets are used in electrical devices?
- What are some common types of magnets?
- How Maglev trains are moved?
- What do you understand by force of attraction and repulsion?
- What happen when like pole of magnets bring closer to each other?
- What happen when unlike pole of magnets bring closer to each other?

Interpreting

Think and write

1. Electricity is important because it used in everyone's daily life to make tasks easy. It almost runs every technology that we use around us.
2. Magnets are materials which attracts certain objects such as iron, nickel and cobalt.
3. Prefer student's answer.
4. Magnets apply a force in specific area around them. This area is called magnetic field.
5. An electromagnet creates a magnet field. This magnetic field can quickly be changed by controlling the amount of electric current. The changing magnetic field produces an electric current.
6. If current passes through a coil of wire it becomes a magnet and called an electromagnet.
   If a magnet passes through a coil of wire, electricity is produced in the wire. This arrangement is called a generator.

Note for a teacher

Make sure students write answers themselves. You should check their concepts as well as their writing skills. It will help you and English language teacher to understand your students where they are weak at and what to improve now**.**

For grade 2 students, answers should be simple and not be with complicated grammar structure.

Lesson Planner
G. Science Class - 5

Chapters	Time - min	Description	Total time min
Branches of science	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	180
	45	Discussion and assessment	
	45	Observatory + Think and write + Check if you know now	
	45	Activity book exercises.	
Scientific methods	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	180
	45	Discussion and assessment	
	45	Observatory + Think and write + Check if you know now	
	45	Activity book exercises.	
Investigating living cells	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	360
	90	Discussion and assessment (break in two parts) with exercises.	
	90	Observatory + Think and write + Check if you know now	
	135	Activity book exercises.	
Microorganism	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	180
	45	Discussion and assessment (break in two parts) with exercises.	
	45	Observatory + Think and write + Check if you know now	
	45	Activity book exercises.	
Brain	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	360
	90	Discussion and assessment (break in two parts) with exercises.	
	90	Observatory + Think and write + Check if you know now	
	135	Activity book exercises.	
Stomach and the digestive system	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	360
	90	Discussion and assessment	
	90	Observatory + Think and write + Check if you know now	
	135	Activity book exercises.	
Respiration and the respiratory system	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	360
	90	Discussion and assessment	
	90	Observatory + Think and write + Check if you know now	
	135	Activity book exercises.	
Heart the circulatory system	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	180
	45	Discussion and assessment (break in two parts) with exercises.	
	45	Observatory + Think and write + Check if you know now	
	45	Activity book exercises.	

Chapters	Time -min	Description	Total time min
Life Cycle	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	**180**
	45	Discussion and assessment (break in two parts) with exercises.	
	45	Observatory + Think and write + Check if you know now	
	45	Activity book exercises.	
Flowering and non-flowering plants	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	**360**
	90	Discussion and assessment (break in two parts) with exercises.	
	90	Observatory + Think and write + Check if you know now	
	135	Activity book exercises.	
Matter, Mass and Weight	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	360
	90	Discussion and assessment	
	90	Observatory + Think and write + Check if you know now	
	135	Activity book exercises.	
Green house effects and global warming	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	180
	45	Discussion and assessment	
	45	Observatory + Think and write + Check if you know now	
	45	Activity book exercises.	
Deep into the Earth	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	360
	90	Discussion and assessment (break in two parts) with exercises.	
	90	Observatory + Think and write + Check if you know now	
	135	Activity book exercises.	
Planets and the Solar system	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	360
	90	Discussion and assessment	
	90	Observatory + Think and write + Check if you know now	
	135	Activity book exercises.	
Understanding sounds	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	180
	45	Discussion and assessment (break in two parts) with exercises.	
	45	Observatory + Think and write + Check if you know now	
	45	Activity book exercises.	
Striking Light	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	360
	90	Discussion and assessment (break in two parts) with exercises.	
	90	Observatory + Think and write + Check if you know now	
	135	Activity book exercises.	
Electromagnetism	45	Warm up, brain storming (with the help of You will need) and exercise given in book.	360
	90	Discussion and assessment (break in two parts) with exercises.	
	90	Observatory + Think and write + Check if you know now	
	135	Activity book exercises.	

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