بِسۡمِ اللّٰہِ الرَّحۡمٰنِ الرَّحِیۡمِ

In the Name of Allah, the Most Gracious, the Most Merciful

SPECTRUM Science

TEACHING GUIDE

FIRST TERM 4

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Spectrum
Enlightening Generations

Spectrum Science
Grade-4 Teaching Guide

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Introduction to Spectrum Science Series Book 1 to 5

Spectrum Science Series is a completely new approach to textbooks. This series focuses on doing one thing right; imparting necessary education to young learners with no frills.

The main aim of *the Science Series Grade-4* textbook is to provide a real-life hands-on experience to the young learners regarding scientific phenomena around us. For this reason, we have ensured multiple sections within a chapter to help students digest scientific knowledge and concepts, through a step-by-step process, rushing nothing.

Every chapter starts with a warm-up section, which includes the *Think* and *Explores* section. It is followed by the *Know* section, which presents new concepts. In the end, we have an *Exercise* section, which includes the *Activity Time* section to test that which students have learnt.

Think

This section rekindles the *existing repository* of *knowledge* and information about young children. Each *Think* activity is aligned with given SLOs, focusing on exercising the mental processing of a child. It aims at directing the students toward the subject of the chapter.

Explore

The *Explore* section asks the children to *perform* an activity. The student has to write the results of their exploration. Combined with *Think* activity, the *Explore* section aims at gearing up the young learners towards the content of the chapter.

Know

The essence of the unit lies in this section. It is carefully *constructed* to disseminate knowledge that adheres to the SLOs and that caters to the curious young minds of the readers. The structure has been ensured to maintain continuity of topics within a chapter, which leads to fun reading and a better understanding of concepts.

Activity

This section comes at the end of the chapters with a focus on *cementing* the knowledge learned by students through *practical* activity. These activities take a cue from the content of the chapter and ask the student to apply it in various ways.

The language of the book has been reviewed and proofed by our language experts, who have painstakingly tried to smooth the edges and maintain continuity within texts.

Spectrum Science Teaching Guide Grade-4

Spectrum Science Teaching Guide consists of unit-wise worksheets, solved exercises of the book, unit-wise assessment papers, a terminal assessment and lesson plans. It is designed to effectively support the teachers in student-centered teaching strategies, with simple and clear instructions.

The following key features of the lesson plans make teaching easier for teachers:

⇒ **Student Learning Outcomes (SLOs)** are carefully planned goals for what students will learn. These also define what students will know and be able to do by the end of the lesson.

⇒ **Prior Knowledge** connects students to what is being taught in class.

⇒ **Resources** are required material in the lesson. Teachers are encouraged to arrange necessary materials in advance.

⇒ **Warm-up** is an icebreaker. These are done to develop students' interest in the subject and generate engagement.

⇒ **Lesson Structure** is the central part of the lesson plan. Its goal is to ensure that learning outcomes are achieved through explanation, demonstration, activities, class discussion, and brainstorming. Referencing the text, illustrations and pictures in the manual will make the lesson engaging and interesting. Teachers are encouraged to collect student feedback to determine if learning outcomes are being achieved.

⇒ **Conclusion** summarizes the topic and often includes an assessment of the topics covered in a particular lesson.

⇒ **Class Assignments** based on worksheets or activities. The teacher can assign it for homework.

⇒ **Homework** is assigned to students during the lesson to reinforce what they have learnt.

Conclusion

We hope teachers and students will find *Spectrum Science Series Books 1-5* thoroughly beneficial. These books contain modern teaching approaches which help students to become curious learners of science.

We wish all the teachers and students using Spectrum Science Series Books 1-5 all the best.

Unit-1- Human Body

Unit Overview

The first unit 'The Human Body' will help students understand the basic concepts of cells, tissues, organs and organ systems. Furthermore, the students will understand the structure and functions of the human skeleton. They will be able to identify some bones, muscles and certain habits to maintain healthy bones.

Model Answers

Exercise 1

Answer the following questions.

i. A group or layer of similar structure of cells that work together for a specific function is called a tissue. Nervous tissues or muscular tissues are some examples.
ii. An organ is a group of tissues that combine to perform a specific function, whereas an organ system is a group of organs working together to perform a body function.
iii. The human skeleton has different function, which are as follows;
    a. It provides support to our body.
    b. The skeletal muscles help our body move.
    c. Human skeleton gives the body a particular shape and structure.
iv. Joints are important because joints allow body parts of the skeleton to move.
v. None of our bones can move by itself. There is always a muscle that helps to move a bone or part of the body.
vi. Calcium-rich food and regular exercise keep our bones healthy and strong.

Exercise 2
Fill in the blanks with correct words.

i. Allah said in the Holy Qur'an, "Surely We have created humans in the best form.

ii. The basic and smallest unit of all living things is called a cell.

iii. The human body has 206 bones.

iv. A skeleton gives support, movement, shape and protection to the human body.

v. The muscles are connected with the bones by tendons.

vi. Biceps and triceps are muscles in our arms that help us lift weight.

vii. Milk is a calcium-rich food.

viii. Science studies physical body and phenomena whereas what is beyond physical body and phenomena does not come inside the scope of science.
ix. The human skull protects the human brain.
x. Islam guides us about the matters beyond physical body and world and teaches us how to be morally and spiritually healthy.

Exercise 3

Write 'T' for a true and 'F' for a false statement.

i. The human body works like an amazing machine. T
ii. A bone is a group of tissues that combine to perform a specific function. F
iii. A framework of bones in our body is known as the skeleton. T
iv. Human rib cage keeps the kidneys and liver in place. T
v. Joints help us move and bend body parts. T
vi. Organs are tough and elastic tissues in our body. F

Exercise 4

Complete the following sequence regarding building material of the human body.

Exercise 5

Complete the following table.

Composition of Human Body	Functions	Examples
cell	A cell takes in nutrients from food and facilitates growth.	skin cells, bone cells, blood cells
tissue	Tissues protect the body from injury and help in body movements.	nervous tissues, muscular tissues
organ	We smell, see, taste, hear and touch with the sense organs.	nose, eyes, tongue, ears, skin

Lesson Plan 1

Subject: Science	Grade: 4	Term: 1st
Week: 1	Unit: 1	Unit Title: Human Body
LP: 1	Textbook Page/s: 8 – 10	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- understand the Human Body and its composition.

Prior Knowledge of Students:

- They know about human body parts.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 Minutes)	**Proceedings**
08 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام علیکم [**Note:** Always remember to say بسمہ اللہ الرحمن الرحیم out loud before you start any lesson or activity and say الحمد للہ after finishing it and encourage the students to do the same, too.] Ask students to open the textbooks and look at the images of vital parts of human body on page no. 8, and ask them to write their names on the space given. After good two or three minutes randomly ask any student what he has written in front of image # 1, 2, 3 and 4. Then confirm that all the students have written the same answer. If the answers are correct, appreciate them. Then come to the Explore section on the same page and ask the question given in page # 8 to different; students. If you do not find the correct answer then explain them that due to the different body structures height of people differs.
22 minutes	**Lesson Structure/Activities/Presentation:** Write the name of the unit on the whiteboard. Tell the students they will learn about composition of Human Body today. **Activity 1:** Ask students to open the textbooks and look at the pictures on page no. 8, and randomly ask any student to read the page # 9-10 and explain it. Ask a randomly other student to read the text regarding composition of human body, its definition, functions and examples.

	During the reading walk in the class continuous and help them in pronunciation the correctly. Explain cell, tissue, organ, organ system and their functions with examples given on page # 9. **Differentiated Learning:** Some students might find it difficult to understand the definition and functions. Sit with them and explain how they are building material and how they are built through each and work. Ask them to repeat after you so that they could be understood clearly.
2 minutes	**Conclusion/Review:** Biologically, life begins with the creation of a cell.
8 minutes	**Classwork/ Assessment:** Make a list of visible human organs.
	Homework/Assignment: Ask the students to read page # 9 and 10 for a short quiz in the next class.

Lesson Plan 2

Subject: Science	Grade: 4	Term: 1st
Week: 1	Unit: 1	Unit Title: The Human Body
LP: 2	Textbook Page/s: 10 – 13	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- describe structure and functions of human skeleton.
- understand about bones and muscles.

Prior Knowledge of Students:

- They can describe the composition of human body.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Model of skeleton
- Worksheet

Time Frame (40 Minutes)	**Proceedings**
5 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [**Note:** Always remember to say بسمہ اللہ الرحمن الرحیم out loud before you start any lesson or activity and say الحمد للہ after finishing it and encourage the students to do the same, too.] Show the model of skeleton to the students and with the help of model describe the movements of joints and skeletal cage and explain them about anatomy.
24minutes	**Lesson Structure/Activities/Presentation:** Write the name of the unit on the whiteboard. Tell the students they will learn about what does science study and the misunderstanding of the limits of science. **Activity 1:** After your explanation ask a random student to read out the textbook on page # 10. Walk around the classroom and explain and guide the students where needed. **Activity 2:** Describe the functions of human skeleton with the help of the pictures given on the bottom of page # 10 and ask some other student to read the topic on page 11 and 12 and explain it.

	Activity 3: Ask the students to solve the activity on page 12 and help them if needed. After completion of activity explain them how we can make our bones healthy and strong with calcium diet and highlight the points to remember and Glossary at page # 13. **Differentiated Learning**: Some students might find it hard to understand functions of bones, joint and muscles. Sit with them and explain them that how the joint bones and muscles work together.
02 minutes	**Conclusion/Review:** Tell the students that we move our body parts with the help of muscles contraction and relaxation.
07 minutes	**Classwork/ Assessment:** Provide a worksheet of bones – muscles to the students and ask them to solve it in the class.
02 minute	**Homework/Assignment:** Ask the students to solve exercise 1 on page # 13 questions (i), (ii) and (iii), and exercise # 3 and 4 on page 14 in their note book and guide them how to do themselves.

Lesson Plan 3

Subject: Science	Grade: 5	Term: 1st
Week: 1	Unit: 1	Unit Title: The Human Body
LP: 3	Textbook Page/s: 8 – 15	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- describe the composition of human body, function of human skeleton and know about the human bones and muscles.
- solve the exercise of the unit.

Prior Knowledge of Students:

- They can answer the question about the Human Body, structure and functions of Human skeleton.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 minutes)	**Proceedings**
10 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسمہ اللہ الرحمن الرحیم out loud before you start any lesson or activity and say الحمد للہafter finishing it and encourage the students to do the same, too.] Write the glossary of the unit on the whiteboard and repeat them all in the classroom to reinforce basic concepts.
25 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Give them a brief explanation of the whole chapter, and reinforce all the main points of the chapter. Ask the students to open their textbook exercise page no. 13. Write questions (iv), (v) and (vi) of the exercise on the whiteboard. Ask the students to open their notebooks and help them answer these questions. Then move towards question 4 and 5 on pages 14 and 15 and guide them to complete the sequence and table respectively. Be on round and make sure no one copies each other.

	Differentiated Learning: Walk around in the classroom. Some students might find it hard in solving exercise. Sit with them, guide and help them.
1 minute	**Conclusion/Review:** Islam guides us about the matters beyond physical body and a world and teaches us how to be morally and spiritually healthy.
Covered in activity#1 (10mins)	**Classwork/ Assessment:**
4 minutes	**Homework/Assignment:** Assign the task to draw a human skeleton on a chart paper and label any five bones with their scientific names with the help of link given at the bottom of page # 15.

Unit-2- A Balanced Diet

Unit Overview

The second unit, 'A Balanced Diet' will help students to understand what a balanced diet is and which common food sources include in a balanced diet. They will be aware of the nutrients present in food, their functions, significance of clean drinking water and some factors which make cause water become unclean. Further they will be informed about the concept and benefits of Halal Meat.

Model Answers

Exercise 1

Answers of questions.

i. A balanced diet means a variety of foods from all food groups in the right amount.

ii. We get food from both plants and animals. There are many types of food that we eat like; wheat, potato, apple, almond, black pepper, milk, eggs, meat, honey, etc.

iii. Five major food groups are as follows;

a. grains
b. fruits and vegetables
c. meat, fish, eggs and alternatives
d. milk and dairy
e. fats, oils and sweets

iv. The food we eat contains many nutrients, such as proteins, carbohydrates, fats, vitamins, minerals are vital for our health.

v. Proteins are called body-building food, because they build and repair tissues and muscles. Eggs and pulses are protein-rich foods.

vi. Vitamins and minerals are very important for our body because they protects us from different diseases.

vii. The right amount of fiber should be a part of our daily diet because it helps in the digestion of food and its excretion.

viii. Drinking clean water is important for us to remain safe from diseases as well as to maintain good health.

ix. Water becomes unclean and contaminated due to various factors, such as chemical waste from factories, pesticides applied to farmland enter surface water and ground water.

x. The food pyramid is a guide that shows what to eat every day and it consists of the major food groups.

Exercise 2

Write 'T' for a true and 'F' for a false statement.

i. We must drink six to eight glasses of clean water daily. T

ii. Food nutrients are also called components of a balanced diet. T

iii. Sugar and starch are two types of proteins. F

iv. Boiling is the safest and the most reliable way to purify water. T

v. The food that we should eat the most are placed at the top of the food pyramid. F

Exercise 3

Write a short note on any one of the following:

Importance of Halal Meat

Islam teaches Muslims that they must eat Halal (permissible in Islam) meat. In order for a meat to become halal, it must not belong to Haram (impermissible in Islam) category of animals, such as pig, dog, etc. Moreover, the animal must be slaughtered following the Islamic method and reciting Allah's name while slaughtering by saying: Bismillah-i-Allah-o- Akbar (In the name of Allah; Allah is the Greatest.)

Halal meat is healthier because by slaughtering according to Islamic method, blood is completely drained out from the animal's arteries taking away all kinds of harmful substances and toxins from the meat. Blood comprises high levels of uric acid which can be quite damaging to the human body if consumed. Research suggests that that those animals killed through other methods their meat consists of E. Coli, other bacteria and harmful substances which causes different diseases, due to its scientifically established healthy features, Halal meat are becoming increasingly important in European countries as well.

Benefits of Sunnah Foods

Food considered part of the Sunnah of Prophet Muhammad for those who would give thought" (The Noble Quran, 2001). Thus, honey is a source of healing for mankind. In an authentic tradition of the Prophet a man came to him and said, "My brother has some abdominal trouble." The Prophet said to him "Let him drink honey." The man came for the second and third time and the Prophet said to him, 'Let him drink honey." He returned and said, "I have done that." The Prophet then said, "Allah has said the truth, but your brother's abdomen has told a lie. Let him drink honey." So he made him drink honey and he was cured" (Bukhari, 2002). In addition, in a study, "Honey as a Dressing for wounds, burns and ulcers; because honey has proven to be useful medicine. Black cumin (seeds) is another diet of the Prophet . All contents of black seeds are ideal cure for the prevention and treatment of cancer. The Prophet said, "Use this black seed regularly, because it is a cure for every disease, except death" (Bukhari, 2002). Another important drink of the Prophet is milk. The Prophet said, "Drink milk, it strengthens the back, increases the brain power, augments intelligence, renews vision and drives away forgetfulness" (Ibn-e-Majah, 1998). Milk is the very source of calcium (around 120mg/100g).

Exercise 4

Match the food groups in column A with their functions in column B.

Column A	Column B
fruits and vegetables	**source for quick energy**
milk and dairy	**keep the body warm**
grains	**help the body to fight diseases**
fats, oils and sweets	**make bones strong**

Exercise 5

Identify and name the food groups in the given food pyramid. Also, write their servings.

Fats, Oils and Sweets Group

Meat, Fish, Eggs 7 Alternatives Group

Fruits Group

Grains Group

Milk and Dairy Group

Vegetables Group

Exercise 6

Find out the quantity of fats in different packaged foods. Cut and paste three nutritional information tables given on packaged foods.

Organic Creamy Tomato Basil Soup

Nutrition Facts

About 4 servings per container

Serving size 1 cup (240 mL)

Amount per serving

Calories 90

	% DV*
Total Fat 2g	3%
Sodium 630mg	27%
Total Carbohydrate 13g	5%
Dietary Fiber 2g	7%
Total Sugars 9g	
Includes 3g Added Sugars	6%
Protein 4g	
Iron 1mg 6% • Potassium 459mg 10%	

Not a significant source of saturated fat, trans fat, cholesterol, vitamin D, and calcium.

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for

INGREDIENTS: WATER, SOY BASE (WATER, SOYBEANS*)*, TOMATO PASTE*, CANE SUGAR*, SEA SALT, ONION PUREE*, HIGH-OLEIC SUNFLOWER OIL*, SODIUM CITRATE, GARLIC PUREE*, SPICES*, RICE FLOUR*, BASIL OIL*.
*ORGANIC
CONTAINS: SOY

Distributed by: Pacific Foods of Oregon, LLC, Tualatin, OR 97062 USA
Certified Organic by Oregon Tilth

Nutrition Facts

8 servings per container

Serving size 2/3 cup (55g)

Amount per serving

Calories 230

	% Daily Value*
Total Fat 8g	10%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 37g	13%
Dietary Fiber 4g	14%
Total Sugars 12g	
Includes 10g Added Sugars	20%
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 235mg	6%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Nutrition Facts

2 servings per container

Serving size 1 cup (237mL)

Amount per serving

Calories 160

	% Daily Value*
Total Fat 4g	6%
Saturated Fat 0.5g	3%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 680mg	28%
Total Carbohydrate 24g	8%
Dietary Fiber 8g	32%
Total Sugars 5g	
Includes 0g Added Sugars	0%
Protein 7g	
Vitamin D 0mcg	0%
Calcium 29mg	3%
Iron 1mg	4%
Potassium 521mg	11%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Also, write the name of each food and its value of fats in the table below.

Food Items	Fats
Tomato Basil Soup	**3%**
Steam Meal	**5%**
Vegetable Soup	**6%**

Lesson Plan 4

Subject: Science	Grade: 4	Term: 1st
Week: 2	Unit: 2	Unit Title: A Balanced Diet
LP: 4	Textbook Page/s: 16 – 18	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- understand the concept of *A Balanced Diet*.
- understand the food types and groups with nutrients.

Prior Knowledge of Students:

- They can differentiate between healthy and unhealthy foods.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker.

Time Frame (40 minutes)	**Proceedings**
08 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسمہ اللہ الرحمن الرحیم out loud before you start any lesson or activity and say الحمد للہ after finishing it and encourage the students to do the same, too.] Ask the students to open textbook's page # 16 and show the images given in Topic 'THINK' and ask them to identify healthy and unhealthy foods given in the pictures and write 'HF' for healthy foods and 'UHF' for unhealthy foods. During the exercise walk in the class and check whether the students are not copying with another student. Discuss and appreciate them. After that at the bottom of page # 16 'Explore', ask the students what do they like to eat in breakfast? Draw and write down the names in their note books.
22 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit and A Balanced Diet on the whiteboard. Tell them they are going to learn about A Balanced Diet. Ask students to open the textbook's page no.17. Read the first page of the unit aloud and explain to them first

	What is a Balanced Diet and what Allah SWT has explained in (Surah Al-Baqarah: 172) to eat good things. Talk to them that we have been given so many things to eat healthy but unhealthy foods attracts the most. Ask a random student to read out the textbook on page no.17 "Food Types and Groups", and explain them that foods are divided into different types and groups. Walk around the classroom and guide the students where needed. Ask another student to read the chart given on page # 18 about food groups, nutrients in it and their examples and explain. **Differentiated Learning**: Some students might find it hard to remember the nutrients in different foods. Give them examples of foods and nutrients it them. Repeat again and again and ask the students to repeat after you loudly. Walk around the classroom continuously.
02minutes	**Conclusion/Review:** Tell the student that food nutrients, such as proteins, fats, vitamins, minerals and carbohydrates are essential for our health.
05 minutes	**Classwork/ Assessment:** Ask the students to write their favorite food from each group and prepare a healthy eating plate.
03 minutes	**Homework/Assignment:** Students will write the answers of question (i), (ii) and (iii) from page # 24, help them how they will find/write the answer.

Lesson Plan 5

Subject: Science	Grade: 4	Term: 1st
Week: 2	Unit: 2	Unit Title: A Balanced Diet
LP: 5	Textbook Page/s: 18 - 20	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- explain the benefits of Halal Meat.
- understand the importance of nutrients values in our daily food.

Prior Knowledge of Students:

- Describe the food types and their groups.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسمہ اللہ الرحمن الرحیم out loud before you start any lesson or activity and say الحمد للہ after finishing it and encourage the students to do the same, too.] Write the names of some food groups and randomly ask the students to give examples of them.
25 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit on the whiteboard. Recall the types of food and their groups. Ask the students to open the textbook's page # 18, and read aloud 'Proud to Know' and explain the Benefits of Halal Meat and explain them how/why it is recommended in Islam and is important for our health. **Activity 2:** After that move to textbook's page no.19 and 20. Read the page and explain the benefits of the nutrients such as Proteins, Carbohydrates, Fats and Vitamins and Minerals.

	Differentiated Learning: Some students might find it hard to understand the importance of nutrients in food or nutrients in food. Sit with them, and explain through the pictures shown in the book on page 19 and ask them to repeat after you so that they can understand.
01 minutes	**Conclusion/Review:** Tell the student that all the nutrients in food play an important role in our health due to their unique characteristics.
07minutes	**Classwork/ Assessment:** Students will write the answers of question (iv), (v) and (vi) from page # 24, help them to find/write the answers.
02 minutes	**Homework/Assignment**. Ask the students to solve the exercise 2 and 4 on page # 24 and 25 from the book and do as homework in their note book.

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Lesson Plan 6

Subject: Science	Grade: 4	Term: 1st
Week: 2	Unit: 1	Unit Title: A Balanced Diet
LP: 6	Textbook Page/s: 20 - 23	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- importance of drinking clean water.
- how to make water clean and suitable for drinking.
- make a food pyramid.

Prior Knowledge of Students:

- Importance of healthy food and importance of nutrients for health.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- A transparent bowl, mineral water and ink.

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام علیکم [Note: Always remember to say بسمہ اللہ الرحمن الرحیم out loud before you start any lesson or activity and say الحمد للہ after finishing it and encourage the students to do the same, too.] Draw the pictures of different food ant randomly ask different students to tell the nutrients in that food. If they give correct answer appreciate them.
25 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit on the whiteboard. Ask students to open the textbook's page no.20 and read the topic 'Water and importance of Drinking clean Water' aloud and explain. Tell them that how water is contaminated from the wastage of chemical industries. After that move on to the page # 21 and read the ways of 'Making Water Clean and Suitable for Drinking'. Ask the students to listen attentively.

	Activity 2: Pour some mineral water from the bottle in the washed transparent bowl, take a sip to show that water is clean and suitable for drinking. Now add some drops of ink in the bowl of water and explain how water becomes unclean and contaminated and not suitable for drinking. **Activity 3:** After that read aloud 'Food Pyramid on the textbook's page # 21 and explain it. Ask the students to listen attentively and pay attention. **Differentiated Learning**: Some students might find it hard to understand the food pyramid. Sit with them, point to the pictures on the text book's page # 21 and explain them Now ask them to repeat after you so that they can understand easily.
03 minutes	**Conclusion/Review:** Tell the student that water is essential to prevent us from diseases as well as to maintain our good health.
04 minutes	**Classwork/ Assessment:** Ask the students to solve the exercise 5 on page # 25 in their textbook and help them to solve it.
03 minutes	**Homework/Assignment:** Students will solve the exercise no. 6 on page # 26 in their notebooks. and bring three empty packets of packaged foods with the food Items for an activity on page # 26 in the next class.

Lesson Plan 7

Subject: Science	Grade: 4	Term: 1st
Week: 3	Unit: 1	Unit Title: A Balanced Diet
LP: 7	Textbook Page/s: 23 - 27	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- solve the exercises of the unit.

Prior Knowledge of Students:

- They know about a balanced diet, importance of nutrients and benefits of Halal meat and drinking clean water.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Worksheet

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسمہ اللہ الرحمن الرحیم out loud before you start any lesson or activity and say الحمد للہ after finishing it and encourage the students to do the same, too.] Review the topics covered in the last class. How to make the water clean and suitable for drinking and food pyramid.
25 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Review the important points of the unit 'A Balanced Diet' on page # 23. After that ask students to open the textbook's page no.24 help them to answer the exercise no. 1 questions (vii), (viii), (ix) and (x). After completing the exercise no. 1, ask the students to solve the exercise no. 5 on page # 25 in the textbook. Walk continuously in the class while students solving the exercises and help them finding the answers/solving them. **Differentiated Learning**:

	Some students might find it hard to find the answers or complete/understand the worksheet. Sit with them, and help them out to complete the worksheet with the help of the empty packets of packaged foods they brought.
01 minutes	**Conclusion/Review:** Tell the student why we should always check the nutritional facts on the packaged foods before consuming it.
06 minutes	**Classwork/ Assessment:** Provide them the worksheet and ask them to solve it.
03 minutes	**Homework/Assignment:** Ask the students to make a food pyramid of five food items with the help of a sample given on page # 27, using craft paper. Label and color the pyramid of their choice foods.

Unit-3- Health and Illness

Unit Overview

The third unit, 'Health and Illness' will help to understand the importance of maintaining good health. They will be able to observe and recognize some common symptoms of illness and differentiate between contagious and non-contagious diseases.

They will also be made aware about the methods of preventing common diseases and their transmission.

Model Answers

Exercise 1

Answer the following questions.

1. Maintaining good health is important, because of good health you enjoy greater energy and fewer aches and pains.
2. We can maintain good health by adopting a healthy lifestyle and a healthy lifestyle includes eating balanced diet, drinking clean water, regular exercise and enough sleep.
3. An illness is a disease or a state of ill health and is usually indicated by some symptoms, like fever and influenza.
4. Contagious diseases are infectious diseases that can spread from one person to another person, whereas Non-contagious diseases are diseases that do not spread from person to person.
5. The disease-causing microbes are called germs. Bacteria and Viruses are the most common germs.
6. Communicable Diseases spread through direct or indirect contacts, such as touching or shaking hands, through air transmission, contaminated food and drinking water and insects or animals.
7. We can protect ourselves from communicable diseases by taking the following precautionary measure:
    i. Always wash hands well before eating and after using the toilet.
    ii. Fruits and vegetables should always be washed well before eating.
    iii. Covering mouth and nose while coughing or sneezing.
    iv. Keeping social distance is a simple way to prevent communicable diseases.
    v. Avoiding crowded places unless very urgent.
    vi. Wear a face mask and disposable gloves in public or in public places.

Exercise 2

Fill in the blanks with suitable words.

i. Disease is a condition that makes people unhealthy.
ii. Nasal congestion and sore throat are symptoms of Influenza.
iii. Non-communicable disease may occur due to deficiency of vitamins and minerals.
iv. Microbes are microscopic organisms.
v. COVID -19 is an example of contagious diseases.
vi. Most of infectious diseases spread through indirect contact.
vii. Some microbes cause many communicable diseases.
viii. Allah cures us when we become ill.

Exercise 3

Complete the following saying of Rasool Ullah □

"If you hear of an outbreak of plague in a land, do not enter it. And if the plague breaks out in a place while you are in it, do not leave that place."

Exercise 4

Write 'T' for a true and 'F' for a false statement.

i. **A contagious disease does not spread from a person to another.** F
ii. **Diabetes is a non-contagious disease.** T
iii. **Disease-causing microbes are called nutrients.** F
iv. **Vaccines protect us from many diseases such as hepatitis B.** T
v. **Mosquitoes can never transmit malaria.** F
vi. **An infection is a disease caused by germs or bacteria.** T
vii. **We frequently fall ill when we do not adopt a healthy lifestyle.** T

Lesson Plan 8

Subject: Science	Grade: 4	Term: 1st
Week: 3	Unit: 3	Unit Title: Health and Illness
LP: **8**	Textbook Page/s: 28-31	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- Understand the importance of maintaining good health.
- Differentiate between illness and disease and the signs and symptoms illness.

Prior Knowledge of Students:

- They can identify some illnesses.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسمہ اللہ الرحمن الرحیم out loud before you start any lesson or activity and say الحمد للہ after finishing it and encourage the students to do the same, too.] Open the textbook's page # 28, show the picture of 'Think' section to the students and ask them to write in the book what it shows. Appreciate their answers. Then move to the 'Explore' section on the same page and ask them if they have ever or recently fallen ill, write the name of illness and the symptoms.
25 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit on the whiteboard. Tell them they are going to learn about importance of maintaining good health, Illness and Disease. Explain them how they can maintain good health and how diseases spread. Ask the students to open the textbook's page # 29 and read aloud the 'Importance of Maintaining Good Health' and explain it to them. Ask them to listen attentively. **Activity 2:**

	Ask randomly any student to read illness and disease on textbook's page no.29. Explain them first the difference between illness and disease, then symptoms. Then move on the page # 30 and read aloud 'Contagious and Non-contagious Disease' and explain it. Walk in the class continuously during the reading and ask them to listen carefully. **Activity 3:** Discuss with them that lack of healthy food causes a deficiency of essential nutrients in our body. Further discuss with them that unhealthy diet, physical inactivity and pollution cause diseases such as asthma, heart attack and diabetes. **Differentiated Learning:** Some students might find it difficult to differentiate/understand between illness and disease or Non-contagious and Contagious disease. Sit with them and explain them the difference between illness and disease and further how a disease is spread and is contagious or non-contagious.
01 minutes	**Conclusion/Review:** Tell the students healthy diet will keep them healthy and energetic.
08 minutes	**Classwork/ Assessment:** Write the questions # (i), (ii) and (iii) of exercise 1 on page # 34 on the board and ask the students to write the answers in their notebook. Help them to find and write the answers in their note book.
01 minutes	**Homework/Assignment:** Students will write the answer of exercise 1, question (iv) on page # 34 in their notebook.

Lesson Plan 09

Subject: Science	Grade: 4	Term: 1st
Week: 3	Unit: 3	Unit Title: Health and Illness
LP: 9	Textbook Page/s: 31-33	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- understand Transmission of Communicable Diseases.
- aware about the prevention of diseases.

Prior Knowledge of Students:

- They can identify the symptoms of common illnesses.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Worksheet

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسمہ اللہ الرحمن الرحیم out loud before you start any lesson or activity and say الحمد للہ after finishing it and encourage the students to do the same, too.] Ask the students if any of their family member got ill in their home recently, if yes, what were the symptoms they observed?
25 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit on the whiteboard. Tell them that diseases can be transferred via different ways. Open the textbooks on page no. 31-32 and randomly ask any student to read aloud about Transmission of Communicable Diseases. Explain them well about the transmission of diseases through Direct or Indirect contact. During reading and explanation walk around the class continuously and ask students to concentrate and listen carefully. **Activity 2:**

	Ask other students to read aloud the Prevention of Diseases on textbook's page # 32 and explain well each point and ask the students to listen carefully. Tell the students how unhealthy or dirty environment can be a reason of spreading diseases because of flies and cockroaches. **Differentiated Learning:** Some students might find difficulty to understand the reason of spreading diseases through direct or indirect contact. Sit with them and moisture you finger with water and touch the hand of the student and explain how direct contact spread diseases.
01 minutes	**Conclusion/Review:** Tell the student that cleanliness and hygiene can save them from many diseases.
11 minutes	**Classwork/ Assessment:** Ask students to open the textbook page no 34-35 and do the exercise 3 and 4, in their notebook. Help the students if they found any difficulty to solve it. Distribute the worksheet and ask them to solve it.
	Homework/Assignment: Students will visit their home kitchen and identify the hazards which may cause diseases and write in points. Students will solve the exercise 2 in their notebook.

Lesson Plan 10

Subject: Science	Grade: 4	Term: 1st
Week: 4	Unit: 3	Unit Title: Health and Illness
LP: 10	Textbook Page/s: 33-36	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- Solve the exercise of the unit.
- Have a survey to identify communicable and non-communicable diseases and their recovery.

Prior Knowledge of Students:

- They can identify/understand and explain the diseases and their symptoms.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسمہ اللہ الرحمن الرحیم out loud before you start any lesson or activity and say الحمد للہ after finishing it and encourage the students to do the same, too.] Ask the students if they found any hazards in their home kitchen which may cause diseases and discuss.
25 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit on the whiteboard. Repeat the importance of proper sleep for health. Ask the students to open the textbooks on page no. 33 and read the points to remember and ask them to repeat after you loudly. **Activity 2:** Write the question # (iv), (v), (vi) and (vii) on the white board of exercise # 1 on page # 34 and ask the students to write the answers in their notebook. Help them if they found any difficulty.

	Activity 3: Divide the class in three or four groups for a health survey in school and ask them to visit different classes and complete/fill the chart given at the bottom on page # 35 in the textbook. **Differentiated Learning:** Some students might find it difficult to answer the exercise no. 1 questions, help them to find the answer.
02 minutes	**Conclusion/Review:** Tell the student the healthy habits.
05 minutes **Includes health survey**	**Classwork/ Assessment:** Health survey.
03 minutes	**Homework/Assignment:** Some items are given on textbook's page # 36; students will make a list of their usages. Teacher will guide them how to make it.

Unit-4-Plant Kingdom

Unit Overview

The fourth unit, 'Plant Kingdom will help students to understand the types of plants.
The students will be made aware of the flowering plant, non-flowering plants, simple and higher plants.
They will also be made aware about the differences and similarities in flowering and non-flowering plants.

Model Answers

Exercise 1

Answer the following questions.

i. Simple plants do not have the main parts such as leaves, flowers, stem, roots and fruits, whereas higher plants have all the main parts like leaves, stem and roots.
ii. Flowering plants are very common seed-bearing plants also known as angiosperms. Examples are; trees, vines, shrubs, etc.
iii. Non-flowering plants do not produce flowers. Conifers are non-flowering plants which belong to a group of plants known as gymnosperms.
iv. Flowering-plants produce flowers, whereas Non-flowering plants do not produce flowers. Both have vascular system.
v. **Frond:** frond is a collective term for roots, stem and leaves.
Vascular System: vascular system is a well-developed system due to which plants can grow tall.

Exercise 2
Fill in the blanks.

i. The flowering-plants are also known as angiosperms.
ii. Algae are the simple plants.
iii. Conifers belong to a group of plants known as gymnosperms.
iv. Allah has put His signs in His creation.
v. Mosses make a velvety green carpet on the forest floor.
vi. Unlike algae and mosses, ferns have roots, stems and specialized leaves.
vii. Religion tells us about the creator whereas science is the knowledge about Allah's creation.
viii. Al-Dinawari was a great Muslim scholar and botanist who wrote a book "Kitab-al-Nabat".
ix. In Islam, planting tree is a charity.

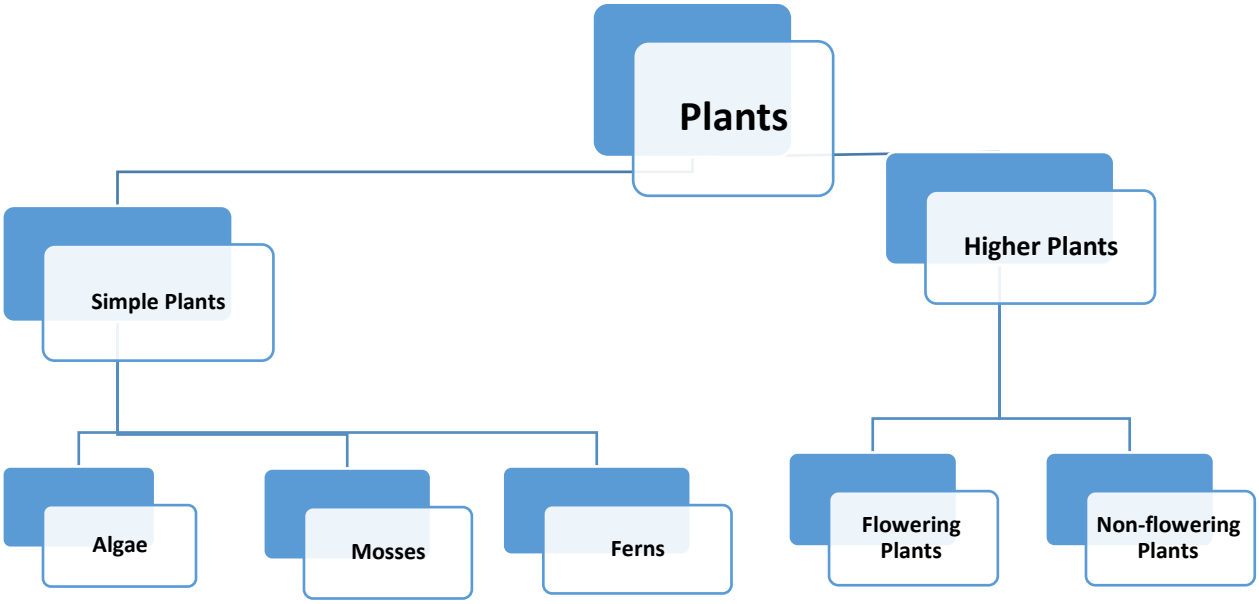
Exercise 3

Match the plants of column A with their features in column B.

Column A	Column B
gymnosperm	non-flowering plants
angiosperm	having a root-like structure
ferns	flowering plants
mosses	unicellular and multicellular plants
algae	fronds

Exercise 4

Complete the treemap of simple and higher plants.



Lesson Plan 11

Subject: Science	Grade: 4	Term: 1st
Week: 4	Unit: 4	Unit Title: Plant Kingdom
LP: 11	Textbook Page/s: 37 - 39	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- describe the classification of Plant Kingdom.

Prior Knowledge of Students:

- They can differentiate between flowering and non-flowering plants.

Teaching Aids/Materials/Resources:

- Textbook
- Board/Marker
- Chart of Flowering and Non-flowering plants + Simple and Higher plants

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام علیکم [Note: Always remember to say بسمہ اللہ الرحمن الرحیم out loud before you start any lesson or activity and say الحمد للہ after finishing it and encourage the students to do the same, too.]
25 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit on the whiteboard. Tell them they are going to learn about the Plant Kingdom and the basic classification of Plant Kingdom. Explain to them the importance of plants on earth for human being and animal, as well as explain the benefits we get from the plants in form of flowers, fruits and different herbs used in medicines. Ask the students to identify the difference between the pictures on page no. 37 in 'Think' section and write the answer in their book. Then move on the 'Explore' section and ask them to write in their book the names of any three flowering plants they observe during travelling or in the garden/nursery. Then tell them about the saying of Hazrat Muhammad Rasoolullah Khatam-un-Nabiyeen □, ***"Planting a tree is a charity."***

	Activity 2: Open the textbook's page # 38 and read the 'Explore' section and explain the plants are one of the most important blessings of Allah (S.W.A) for our survival and how human beings and animals are directly or indirectly depend on plants for their food. Then move on to the next topic 'Basic Classification of the Plant Kingdom' and explain it to them with the help of chart given in the book page # 38. **Activity 3:** Ask randomly any student to read the topic 'Simple Plants' at page # 38 and 39 and explain it to them. During reading walk in the class continuously and correct the pronunciation of the students. **Differentiated Learning:** Some students might find it difficult to understand the difference between simple and higher plants. Use the chart to explain the difference between simple and higher plants.
01 minutes	**Conclusion/Review:** Tell the students about the importance of plants.
08 minutes	**Classwork/ Assessment:** Write question (i) of exercise # 1 on white board and ask the students to find the answer and write it in their notebook. Guide them to find and answer of the question.
01 minutes	**Homework/Assignment:** Students will read (review) the topics algae, mosses and ferns at home.

Lesson Plan 12

Subject: Science	Grade: 5	Term: 1st
Week: 4	Unit: 4	Unit Title: Plant Kingdom
LP: 12	Textbook Page/s: 40 - 44	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- explain the difference between simple and higher plants.

Prior Knowledge of Students:

- They can explain classification of plant kingdom.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Pots of flowering plants having flowers in them.
- A Chart or Flash cards of Simple and Higher plants.

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام علیکم [Note: Always remember to say بسمہ اللہ الرحمن الرحیم out loud before you start any lesson or activity and say الحمد للہ after finishing it and encourage the students to do the same, too.] Show the pots of plants to the students and ask a student randomly to identify the simple plant pots and higher plant pot.
15 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit on the board. Tell them they learnt about the simple plants in the previous class and today they are going to learn about the Higher plants and difference between Flowering and Non-flowering plants. Ask the students to open textbook's page no. 40 and read aloud the topic 'Higher Plants' and explain it to the students. After that random ask a student to read the topic 'Flowering Plants' aloud. Stop the student where necessary and explain them each part simultaneously using the chart/flash cards.

	Activity 2: Take the students to the nearby garden (or a place within school where different plants re available. The teacher will make them observe different plants and analyze the differences and similarities in flowering and non-flowering plants and simple and Higher plants on the basis of what they learnt in this unit. **Differentiated Learning**: Some students might find it hard to identify the different parts of plant structure. Sit with them and explain them with the help of the picture on page no. 40 and help them to understand.
01 minutes	**Conclusion/Review:** Tell the students that plants are classified on the basis of their structures.
18 minutes	**Classwork/ Assessment:** Ask the students to open page # 42 of textbook solve the exercise 2 'Fill in the blanks', then move on to page # 43 and help the students to solve the exercise # 3 and 4 in their book and guide the student to write the answer on their notebooks.
01 minutes	**Homework/Assignment:** Guidance given in the class by the teacher students will answer the question no. (ii), (iii), (iv) and (v) in the note book from home. Students will make a paper craft of any fruit or vegetable of their choice with the help of the sample given on textbook's page # 44.

Unit-5-Animal Kingdom

Unit Overview

The fifth unit, 'Animal Kingdom' will help reinforce the classification of animals in terms of vertebrates and invertebrates and differences between them.

The students will be made aware about cold-blooded and warm-blooded animals. They will also made aware about the major classification of vertebrates.

Model Answers

Exercise 1
Answer the following questions.

i. Classification of animals among all living things is categorized as animal kingdom.
ii. Animals with a backbone or vertebrate column are known as vertebrates and animals without a backbone of vertebrate column are known as invertebrates.
iii. Animals whose body temperatures change according to the surrounding temperature are called cold-blooded animals. And animals that retain their body temperature are called warm-blooded animals.
iv. Scientist describes a mammal as warm-blooded animals, they give birth to their babies and feed them with milk.
v. The reptiles are different from other vertebrates as;
   a. They lay leathery eggs.
   b. Reptiles have scaly bodies.
   c. Reptiles breathe through their lungs.
vi. Islam teaches us that we should treat animals with kindness and compassion. They exist for the benefits of human beings.

Exercise 2
Circle the correct answer.

i. There are approximately 45,000 living species of:
   a. vertebrates b. invertebrates c. plants
ii. Fish breathe in water through their;
   a. lungs b. gills c. skin
iii. Which of the following animal is not a mammal?
   a. frog b. sheep c. lion
iv. Which of the following animal is an invertebrate?
   a. owl b. bee c. deer
v. What do birds have on their bodies?
   a. scales b. fins c. feathers
vi. Human beings belongs to the group of:
   a. bird b. mammal c. insect

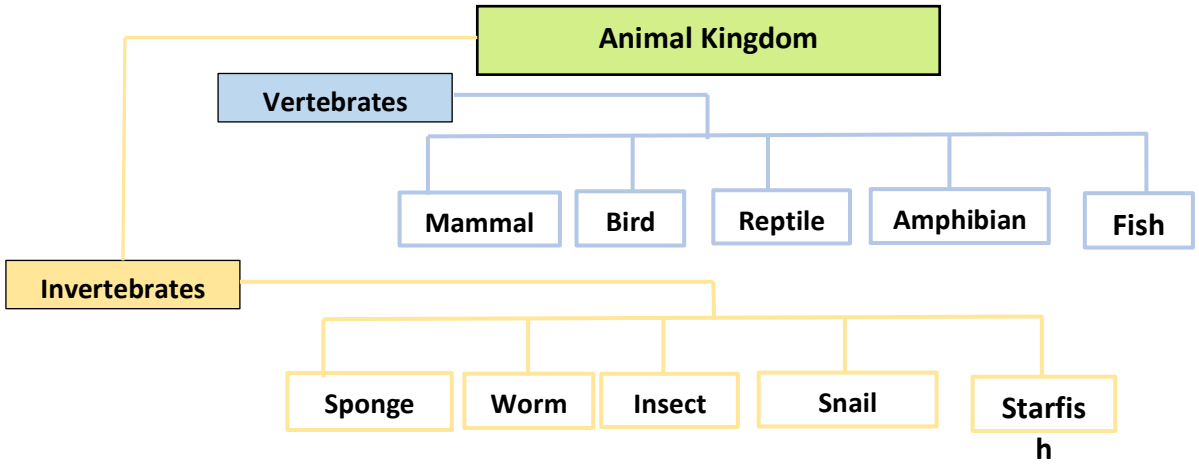
Exercise 3

Match each animal in column A with its respective feature in column B.

Column A	Column B
humming bird	largest bird
ostrich	running bird
kiwi	largest mammal
blue whale	smallest bird

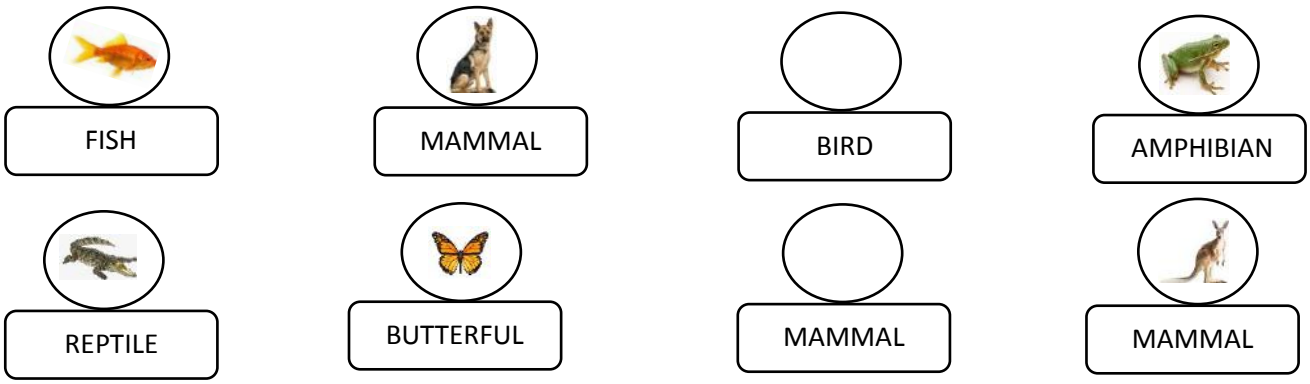
Exercise 4

Complete the flow chart of animal kingdom.



Exercise 5

Look at the chart below. Recognize the animals and write their respective groups (Bird, Reptile, Fish, Amphibian, Mammal, Worm, Insect) under each picture.



INSECT

REPTILE

MAMMAL

REPTILE

MAMMAL

REPTILE

FISH

MAMMAL

Lesson Plan 13

Subject: Science	Grade: 4	Term: 1st
Week: 5	Unit: 05	Unit Title: Animal Kingdom
LP: 13	Textbook Page/s: 45, 46, and 47	Duration: 40 minutes
Teacher:	School	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- describe Animal Kingdom with major groups.

Prior Knowledge of Students:

- They can differentiate between animals, birds and insects.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Flash cards

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسمہ اللہ الرحمن الرحیم out loud before you start any lesson or activity and say الحمد للہafter finishing it and encourage the students to do the same, too.] Ask the student to open their textbook's page no. 45 and look at the 'Think' section. Ask them to tick right the animals with backbone in front of each picture cross on the animals without a backbone in front of each picture on textbook. Then move on to 'Explore' section and as the students to write the name some fo the animals they see in the zoo.
28 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit on the whiteboard. Tell them they are going to learn the 'Animal Kingdom'. Tell them that Islam teaches us to treat animals with compassion and kindness. They exist for the benefit of human beings. **Activity 2:**

	Ask the students to open their textbook's page no.46 and read aloud section 'Know' on the top of page # 46 and explain them that Almighty Allah has made this world so beautiful with a number of living and non-living things which include various types of animals, birds, insects and plants and we know them as living things. Further explain them how scientists classify/differentiate the living things on the basis on their specific features and what they are called. **Activity 3:** Randomly ask a student to read aloud the topic 'Vertebrates and Invertebrates' on the same page and explain it to them. Randomly call a student in front and turn him around and explain/made them aware with the backbone or vertebral column on his back. Then explain the flow chart of Animal Kingdom on the bottom of the page # 46 – 47. **Activity 4:** Ask other student to read aloud the topic 'Cold-blooded and Warm-blooded Animals' on page # 47 and explain it to them. Walk around in the class continuously during the reading and correct the pronunciation if delivered incorrect and ask them to repeat after you. **Differentiated Learning:** Some students might find it difficult to understand the vertebral column or they might find it difficult to differentiate the cold-blooded and warm-blooded animals. Sit with them and explain them with the help of flash cards.
01 minute	**Conclusion/Review:** Tell the students about reproduction through other parts of plants.
06 minutes	**Classwork/ Assessment:** The students will answer the question no. (i) and (ii) of exercise 1 textbook's page no. 50. Help them to explore and write the answer in the notebook.
	Homework/Assignment: Student will find at least two of their favourite vertebrates in any magazine or newspaper and will paste on the textbook's page # 47.

Lesson Plan 14

Subject: Science	Grade: 4	Term: 1st
Week: 5	Unit: 05	Unit Title: Animal Kingdom
LP: 14	Textbook Page/s: 48, 49, and 50	Duration: 40 minutes
Teacher:	School	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- describe the classification of vertebrates which include Mammals, Birds, Reptiles, etc.
- Solve the exercise of textbook.

Prior Knowledge of Students:

- They can classify the living things on the basis of their specific features and can explain the Animal kingdom.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام علیکم [Note: Always remember to say بسمہ اللہ الرحمن الرحیم out loud before you start any lesson or activity and say الحمد للہafter finishing it and encourage the students to do the same, too.] Review the previous lesson and ask some random students about the examples of vertebrates and invertebrates. Listen to their responses and appreciate them if they answer correctly.
25 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit on the whiteboard. Tell them they are going to learn 'Classification of Vertebrates'. Ask the students to open their textbook page no.48 and read aloud and explain the classification of vertebrates. **Activity 2:** Ask a student randomly to read 'Mammals' on textbook's page # 48.

	During reading walk around the class and help them if he found difficulty in reading or pronouncing the difficult words and ask them to repeat after you. **Activity 3:** Move on to page # 49 and ask some other student to read aloud on the next page 'Reptiles, Amphibians and Fish' and explain it. Continuously walk around the class and help them to pronounce the difficult words and ask them to repeat after you. **Differentiated Learning:** Some students might find difficulty in understanding the difference between cold-blooded and warm-blooded animals. Sit with them, and explain to them with the help of the pictures given in the book on page # 48 and 49.
01 minute	**Conclusion/Review:** Tell the students all the animals are the blessing of Allah (S.W.A) for the human beings.
08 minutes	**Classwork/ Assessment:** On board write the questions # (iii), (vi) of exercise 1 on page # 51 and help the students to answer the question on their notebook.
01 minute	**Homework/Assignment:** Students will answer the question (iv) and (v) of exercise 1 on textbook's page no. 51 in their notebook.

Lesson Plan 15

Subject: Science	Grade: 4	Term: 1st
Week: 5	Unit: 05	Unit Title: Animal Kingdom
LP: 15	Textbook Page/s: 50 - 53	Duration: 40 minutes
Teacher:	School	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- Solve the exercises of the lesson.

Prior Knowledge of Students:

- They can describe the animal kingdom, differentiate between vertebrates and invertebrates, cold-blooded and warm-blooded animals and classification of vertebrates.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Worksheet

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسمہ اللہ الرحمن الرحیم out loud before you start any lesson or activity and say الحمد للہ after finishing it and encourage the students to do the same, too.] Review the topics and ask the students about the differences of cold-blooded and warm-blooded animals. Listen to their responses and appreciate them if they answer correctly.
30 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit on the whiteboard. Ask the students to open the textbook's page # 50 and read aloud the 'Points to Remember'. Now tell them they are going to solve the exercise 2, 3, and 4 on page no. 51 and 52 in their textbook. Help them to solve the exercises and appreciate their answers. **Activity 2:** **Distribute worksheet and ask them to solve it.**

	Differentiated Learning: Some students might find it difficult to solve the exercises. Sit with them and help them to find the answers and guide them how to find the answer from the book. Some students might finish their classwork earlier. Ask them to review their answers.
02 minute	**Conclusion/Review:** Tell the students and emphasize that always review the answers before giving their copies or worksheet to the teacher.
	Classwork/ Assessment: Activity 2
03 minute	**Homework/Assignment:** student will solve the exercise # 5 in textbook.

Unit 1- The Human Body-Worksheet

Lesson Plan 2

Circle the correct answer.

Bones and Muscles

1. **How many bones do you have as an adult?**

   300 **206**

2. **What are the parts of the body that help you move by contracting and relaxing?**

   brain **stomach** **bones** **muscles**

3. **What is the function of the bones?**

   to hold up the body **to break down food**

4. **Match the name of the bones correctly.**

rib

leg

finger

skull

Unit 2- A Balanced Diet-Worksheet

Lesson Plan 7

Write the name of food in Column A and mention the Nutritional Facts given on its packaging in Column B.

Column A FOOD ITEMS (NAME)	Column B NUTRITIONAL FACTS

Unit 3- Health and Illness - Worksheet

Lesson Plan 9

Tick ✓ for the correct answer and ✗ for the wrong answer.

1. **"Health is wealth" is a world-famous proverb about health. _____**
2. **There are four general types of diseases. _____**
3. **Diabetes and cancer are contagious diseases. _____**
4. **Unhealthy lifestyle is another reason for communicable diseases. _____**
5. **Coronavirus emerged in China in January 2020.**
6. **Tuberculosis (TB) is a non-contagious disease. _____**
7. **We should not wash fruits and vegetable before eating. _____**
8. **Keeping social distance is a simple way to prevent communicable diseases. _____**
9. **Typhoid do not spread through contaminated food and water. _____**
10. **Vaccines do not protect us from diseases such as hepatitis B. _____**

Unit 5- Animal Kingdom - Worksheet

Lesson Plan 15

Write 'T' for true and 'F' for the false answer.

1. **All the mammals are vertebrates. _____**
2. **There are eight kingdoms of living things. _____**
3. **Cold-blooded animals retain their body temperature. _____**
4. **Reptiles, fish and amphibians are cold-blooded animals. _____**
5. **Mammal and birds are warm-blooded animals. _____**
6. **Most of the mammals live in water. _____**
7. **Amphibians can live both on land and in water. _____**
8. **Fish breathe through their lungs. _____**
9. **Ostrich can fly very high. _____**
10. **Animal kingdom is the largest kingdom. _____**

Unit-Assessments

Unit-1 Human Body

Name: _____ **Roll No:** _____ **Date:** _____

Time: 10 Minutes	**Total Marks:** /10

Fill in the blanks with correct words. **/4**

i. A cell is the basic and _____ unit of all living things.
a) largest b) smallest

ii. Nose, eyes and tongue is the examples of _____.
a) organ b) tissue

iii. The hard tissue of eh human skeleton is called the _____.
a) muscle b) bone

iv. The human skeleton consists of _____ bones.
a) 206 b) 306

Question B

Match the picrtures with their correct names. **/4**

SKULL

RIB CAGE

FINGERS

LEGS

Question C
Answer the questions. **/2**

1. What is a cell?
Answer: _____

2. What is an organ?
Answer: _____

Unit-2 A Balanced Diet

Name: _____ **Roll No:** _____ **Date:** _____

Time: 10 Minutes	**Total Marks:** /10

Question A

Fill in the blanks with correct words. **/4**

i. _____ give energy to the body and keep it warm.
a) protein b) fats

ii. Food Pyramid is a food _____.
a) dictionary b) guide

iii. _____ makes bones strong.
a. grains b) milk and dairy

iv. Walnut is a _____.
b) Pulse b) dry fruit

Question B

Draw a line to match correct types of food **/3**

fruits	**almond, walnut and dates**
cereals	**apple, banana and mango**
dry fruits	**corn, wheat and rice**

Question C

Answer the questions. **/3**

1. What is the meaning of a balanced diet?

Answer: _____

2. What keeps us active all day long?

Answer: _____

3. Which foods can protect us from different diseases?

Answer: _____

Unit-3 Health and Illness

Name: _____ **Roll No:** _____ **Date:** _____

Time: 10 Minutes	**Total Marks:** /10

Question A

Fill in the blanks with correct words. **/4**

i. Coronavirus disease emerged in China in December _____.
a) 2019 b) 2020

ii. Tuberculosis (TB) and influenza are examples of _____.
a) contagious disease b) Non-contagious disease

iii. Contagious diseases are also called _____ diseases.
a) communicable b) non-communicable

iv. _____ do not spread from person to person.
a) contagious disease b) Non-contagious disease

Question B

Match the name of diseases with their types. **/3**

Polio	Contagious	COVID-19
Tuberculosis		Diabetes
	Non- contagious	
Cancer		Influenza

Question C

Answer the questions. **/3**

1. What causes a deficiency of essential nutrients (e.g. vitamin and minerals)?

Answer: _____

2. Define germs. Also give an example.

Answer: _____

3. What are the signs and symptoms of Fever?

Answer: _____

Unit 4 Plant Kingdom

Name: _____ **Roll No:** _____ **Date:** _____

Time: 10 Minutes	**Total Marks:** /10

Question A

Write 'T' for true and 'F' for a false statement. **/4**

i. Planting a tree is a charity.

ii. Flowering-Plants are also known as gymnosperms.

iii. Cone-bearing plants have seeds inside cones.

iv. All the plants of world make plant kingdom.

Question B

Match the plants with their classification. **/3**

Simple Plants

Non-flowering Plants

Ferns

Question C

Answer the questions. **/3**

1. What is the name of the book written by a great Muslim scientist Al-Dinawari?

Answer: _____

2. What is simple or lower plants?

Answer: _____

Unit 5 Animal Kingdom

Name: _____ **Roll No:** _____ **Date:** _____

Time: 10 Minutes	**Total Marks:** /10

Question A

Fill in the blanks with correct words. **/3**

i. There are _____ kingdoms of living things. (three, five)

ii. Animals with backbone are known as _____. (vertebrates, ono-vertebrates)

iii. Animals who retain their body temperature are called. (cold-blooded animals, Warm
-blooded animals)

Question B

Match the animals with their kingdoms. **/4**

Question C

Answer the questions. **/3**

1. How many kingdoms of living things are there?

Answer: _____

2. Define cold-blooded animals with an example.

Answer: _____

3. What is the difference between vertebrates and invertebrates?

Answer: _____

Terminal Assessment Paper

First Term

1st Term Assessment **Time: 40 Minutes**

SCIENCE SERIES 1

Name: _____ **Roll No:** _____ **Date:** _____

Section	Section-I	Section-II	Practical Activities	Viva	Total
Maximum Marks	**40**	**10**	**05**	**05**	**60**
Obtained Marks					

Section-I

Question 1

Fill in the blanks with correct word. **/07**

i. System to transport water, minerals and food to different parts of eh plants is known as _____. (transport system, vascular system)

ii. Chimpanzee and monkey are considered as _____animals. (lazy, intelligent)

iii. Conifers are _____ plants which belong to a group known as gymnosperms. (Flowering Plants, Non-flowering Plants)

iv. _____ is another reason for non-communicable diseases. (healthy lifestyle, unhealthy lifestyle)

v. Communicable diseases are also called _____ (contagious, non-contagious)

vi. _____ is the safest and the most reliable way to purify water. (cooling, boiling)

vii. A _____ is a group of tissues that combine to perform a specific function. (cell, organ

Question 2

Write 'T' for true and 'F' for false statement. **/08**

i. Cells make tissues, tissues make organs and organs make body parts or organ system.

ii. Muscles are tough, elastic tissues in the human body.

iii. A part of human body that has a particular function is tissue.

iv. The human body consists of 306 bones.

v. Joints helps us move and bend body parts.

vi. Food is the basic necessity of life.

vii. Nutrients or substances are also called components of a balanced diet.

viii. Plants are divided into four groups on the basis of their body structure.

Question 3

Enlist the names of Simple Plants and Higher Plants. **/05**

1. _____ 3. _____ 5. _____

2. _____ 4. _____

Question 3

Match the column A with column B. **/10**

Column A		Column B
gymnosperm		*non-flowering plants*
ferns		*having a root-like structure*
angiosperm		*unicellular and multicellular plants*
mosses		*fronds*
algae		*flowering-plants*
tiger		*amphibian*
salamander		*mammal*
humming bird		*largest bird*
blue whale		*smallest bird*
ostrich		*largest mammal*

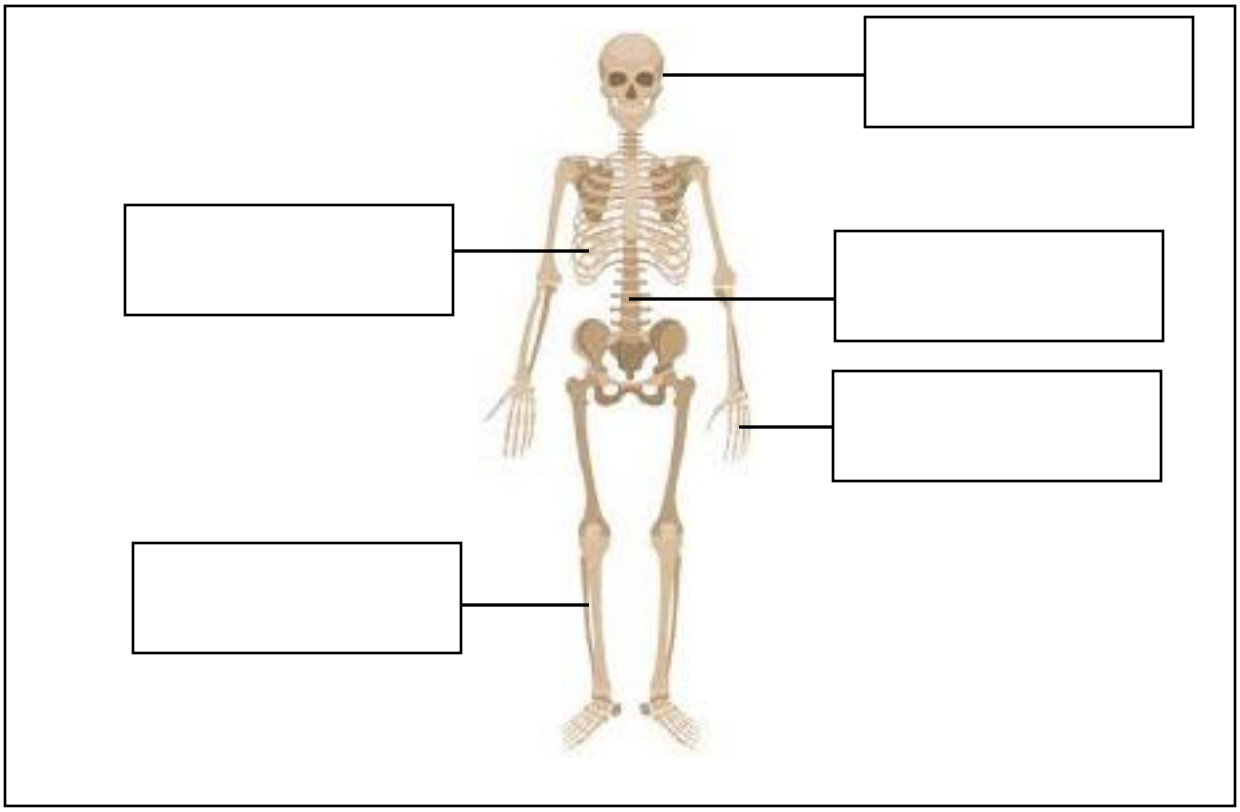
Question 4

Write the names of five mammals and five reptiles. **/05**

i. _____ **vi.** _____
ii. _____ **vii.** _____
iii. _____ **viii.** _____
iv. _____ **ix.** _____
v. _____ **x.** _____

Question 5 **/05**

Label the given diagram:



Section-II

Question 6

Answer the questions. /10

1. **What is meant by animal kingdom?**

Answer:

_____

_____

2. **How should we treat animals?**

Answer:

_____

_____

3. **Define germs. Also, give examples.**

Answer:

_____

_____

4. **How can we maintain good health?**

Answer:

_____

_____

5. **What are the food nutrients?**

Answer:

_____

_____

6. **Write three functions of the human skeleton.**

Answer:

_____

_____

7. **What is food pyramid?**

Answer:

_____

_____

8. **How do muscles and bones work together?**

Answer:

_____

_____

9. What are the key differences between simple and higher plants?

Answer:

_____

_____

10. Who was Al-Dinawari? And what was his work?

Answer:

_____

_____

Question 7
Write five characteristics of Mammals: /05

Answer:

_____

_____

_____

_____

_____

_____

_____

_____

Question 8 /05

Write a short note on any one of the following:

i. Benefits of Sunnah Foods **ii. Importance of Halal Meat**

Answer:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

بِسۡمِ اللّٰہِ الرَّحۡمٰنِ الرَّحِیۡمِ

In the Name of Allah, the Most Gracious, the Most Merciful

SPECTRUM Science

TEACHING GUIDE

SECOND TERM 4

Prepared by:
Zeeshan Bukhari

Reviewer:
Saifullah Khalid

Spectrum
Enlightening Generations

Spectrum Science
Grade-4 Teaching Guide

Table of Contents Second Term

Introduction to Spectrum Science Series Book 1 to 5

Spectrum Science Series is a completely new approach to textbooks. This series focuses on doing one thing right; imparting necessary education to young learners with no frills.

The main aim of *the Science Series Grade-4* textbook is to provide a real-life hands-on experience to the young learners regarding scientific phenomena around us. For this reason, we have ensured multiple sections within a chapter to help students digest scientific knowledge and concepts, through a step-by-step process, rushing nothing.

Every chapter starts with a warm-up section, which includes the *Think* and *Explores* section. It is followed by the *Know* section, which presents new concepts. In the end, we have an *Exercise* section, which includes the *Activity Time* section to test that which students have learnt.

Think

This section rekindles the *existing repository* of *knowledge* and information about young children. Each *Think* activity is aligned with given SLOs, focusing on exercising the mental processing of a child. It aims at directing the students toward the subject of the chapter.

Explore

The *Explore* section asks the children to *perform* an activity. The student has to write the results of their exploration. Combined with *Think* activity, the *Explore* section aims at gearing up the young learners towards the content of the chapter.

Know

The essence of the unit lies in this section. It is carefully *constructed* to disseminate knowledge that adheres to the SLOs and that caters to the curious young minds of the readers. The structure has been ensured to maintain continuity of topics within a chapter, which leads to fun reading and a better understanding of concepts.

Activity

This section comes at the end of the chapters with a focus on *cementing* the knowledge learned by students through *practical* activity. These activities take a cue from the content of the chapter and ask the student to apply it in various ways.

The language of the book has been reviewed and proofed by our language experts, who have painstakingly tried to smooth the edges and maintain continuity within texts.

Spectrum Science Teaching Guide Grade-4

Spectrum Science Teaching Guide consists of unit-wise worksheets, solved exercises of the book, unit-wise assessment papers, a terminal assessment and lesson plans. It is designed to effectively support the teachers in student-centered teaching strategies, with simple and clear instructions.

The following key features of the lesson plans make teaching easier for teachers:

⇒ **Student Learning Outcomes (SLOs)** are carefully planned goals for what students will learn. These also define what students will know and be able to do by the end of the lesson.

⇒ **Prior Knowledge** connects students to what is being taught in class.

⇒ **Resources** are required material in the lesson. Teachers are encouraged to arrange necessary materials in advance.

⇒ **Warm-up** is an icebreaker. These are done to develop students' interest in the subject and generate engagement.

⇒ **Lesson Structure** is the central part of the lesson plan. Its goal is to ensure that learning outcomes are achieved through explanation, demonstration, activities, class discussion, and brainstorming. Referencing the text, illustrations and pictures in the manual will make the lesson engaging and interesting. Teachers are encouraged to collect student feedback to determine if learning outcomes are being achieved.

⇒ **Conclusion** summarizes the topic and often includes an assessment of the topics covered in a particular lesson.

⇒ **Class Assignments** based on worksheets or activities. The teacher can assign it for homework.

⇒ Homework is assigned to students during the lesson to reinforce what they have learnt.

Conclusion

We hope teachers and students will find *Spectrum Science Series Books 1-5* thoroughly beneficial. These books contain modern teaching approaches which help students to become curious learners of science.

We wish all the teachers and students using Spectrum Science Series Books 1-5 all the best.

Unit-6- Ecosystem and Food Chain

Unit Overview

The sixth unit 'Ecosystem and Food Chain' will help students to understand the ecosystem and its biotic and abiotic components, interdependence between plants and animals, identification of the main parts of a food chain and the explanation how they work. Further the students could discuss the value of a balanced ecosystem.

Model Answers

Exercise 1

Answer the following questions.

i. An ecosystem is a naturel environment in a particular area made up of all the living and non-living things. Deserts, forests, oceans, ponds and grasslands are different types of ecosystems.
ii. Livings things or living components like humans, animals and plants are biotic, on the other hand non-living things or non-living components like rainfall, temperature, air soil and water are abiotic of an ecosystem.
iii. Plants and animals are interdependent, because most of the animals consume vegetables, fruits and grains to live. Similarly, plants used dead bodies of animals and plants to get the nutrients to survive. Their remains get mixed with the soil. Plants take these nutrients from the soil by their roots.
iv. Transferred of energy from one living thing to another in the form of food is **Food Chain**. The parts of food chain are the sun, primary consumer, secondary consumer, tertiary consumer, decomposer and producer.
v. The food chain starts with plants as they can make their own food. Green plants are called producers.
vi. The Sun is a great blessing of the Almighty Allah. The Sun radiates energy for the plants to make food. The Sun's energy gets stored in plants in the form of food. This food energy passes from plants to the animals when they eat plants.
vii. Those who get their food directly or indirectly from plants are consumers. Humans and animals consume both plants and animals; hence they are called consumers.
viii. Decomposers provide nutrients to the soil. Plants (producers) use these nutrients in their food-making process. In this way decomposers help us to keep our Earth clean by recycling the dead matters.
ix. The competition occurs when more than one organism in an environment has the same need for sources as another to survive.
x. A balanced ecosystem is important because it ensures survival of all organisms along with stability of the environment.

Exercise 2

Fill in the blanks with correct words.

i. A food chain starts with Plants (Producers).
ii. The Sun is essential for all food chains.
iii. Deforestation leads to drought.
iv. The animals which get their food by eating animals that eat plants are known as Secondary consumers.
v. There should be a balance within each ecosystem in order to stay vital.
vi. Human activities, such as farming and resources exploitation, should be checked to prevent excessive destruction of the forests.
vii. A network of a large number of food chains is known as a food web.

Exercise 3

Write 'T' for a true and 'F' for a false statement.

i. Animals and plants depend upon each other. T
ii. Plants absorb oxygen and release carbon dioxide during photosynthesis. F
iii. Energy flows from consumers to producers. F
iv. When animals die, their body nutrients get mixed in the soil. T
v. Herbivores, carnivores, omnivores and scavengers are all producers. F
vi. Human being plays a key role to maintain a balanced ecosystem. T
vii. Both biotic and abiotic components of an ecosystem are dependent on each other directly or indirectly. T

Exercise 4

Match the predator on the left with its prey on the right.

PREDATORS	PREY
Fox	Fly
Lion	Rat
Shark	Rabbit
Spider	Small Fish
Snake	Zebra

Exercise 5

Discuss the Ayah number 95 of Surah Al-An'am of the Holy Quran with reference to the concept of a food chain.

Allah said in the Holy Quran (Surah Al-An'am: 95)

"Surely Allah splits open the seed and fruit stones. He brings froth the living from the dead, and produces the dead out of the living. This is Allah, so how are you misguided?"

In the above Ayah of the Holy Qur'an our attention is drawn to the concept of a food chain. Today we know that when a living thing dies, microorganisms, such as fungi, bacteria and earthworms, quickly cause it to decompose. The dead body is thus divided up into organic molecules that mix with the soil and from the basic source of food for plants, animals and, ultimately, humans. Dead creatures play a vital role in the emergence of new ones.

Exercise 6

Complete the following table.

<table>
<tr><th>PRIMARY SOURCE OF ENERGY</th><th>PRODUCER</th><th colspan="3">PRIMARY CONSUMER</th></tr>
<tr><td rowspan="5">The Sun</td><td>Plants</td><td colspan="3">Insects</td></tr>
<tr><td>Producer</td><td>Primary Consumer</td><td colspan="2">Secondary Consumer</td></tr>
<tr><td>Plants</td><td>Insects</td><td colspan="2">Frog</td></tr>
<tr><td>Producer</td><td>Primary Consumer</td><td>Secondary Consumer</td><td>Tertiary Consumer</td></tr>
<tr><td>Plants</td><td>Insects</td><td>Frog</td><td>Eagle</td></tr>
</table>

Lesson Plan 16

Subject: Science	Grade: 4	Term: 2nd
Week: 6	Unit: 6	Unit Title: Ecosystem and Food Chain
LP: 16	Textbook Page/s: 54 – 56	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- understand the Ecosystem, Biotic & Abiotic components of an Ecosystem.

Prior Knowledge of Students:

- They know about herbivores, carnivores, omnivores.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 Minutes)	**Proceedings**
08 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [**Note:** Always remember to say بسم الله الرحمن الرحيمout loud before you start any lesson or activity and say الحمد للهafter finishing it and encourage the students to do the same, too.] Ask students to open the textbooks and look at the images and identify 'H' for herbivores, 'C' for carnivores, 'O' for omnivores & 'S' for scavengers below each picture on page no. 54, and help them if they don't identify. Then come to the Explore section on the same page and ask the students to write any three types of food we get from plants and three types of food we get from animals. After good four or five minutes check their answers and appreciate them if they are correct and guide them in case of incorrect answers.
22 minutes	**Lesson Structure/Activities/Presentation:** Write the name of the unit on the whiteboard. Tell the students they will learn about Ecosystem, Biotic and Abiotic of an Ecosystem today. **Activity 1:** Ask the students to open the textbooks' page no. 55 and randomly ask any student to read Ecosystem on page # 55 and explain it. During the reading walk in the class continuous and help them in pronunciation the words correctly.

	Ask a randomly other student to read the next topics 'Biotic and Abiotic Components of an Ecosystem' & 'Interdependence between Plants and Animals' on page nos. 55-56. During the reading walk in the class continuous and help them in pronunciation the words correctly and explain. **Differentiated Learning:** Some students might find it difficult to understand the concept of ecosystem, some may find difficult to differentiate Biotic and Abiotic components or interdependence b/w Plants and Animals. Sit with them and explain them the difference of Biotic & Abiotic and how Plants and Animals are interdependence. Ask them to repeat after you so that they could be understood clearly.
2 minutes	**Conclusion/Review:** Natural environment made up of living & non-living things is an ecosystem and Plants and Animals depends on each other.
8 minutes	**Classwork/ Assessment:** Ask them to find the answer of Q # (i) of Exercise # 1 on page 63 and help them to find the answers and write it on their notebook.
	Homework/Assignment: Ask the students to find the answer of Q # (iv), (v), (vi) and (vii) of Exercise # 1 on page 63, guide them to write the answer correctly.

Lesson Plan 17

Subject: Science	Grade: 4	Term: 2nd
Week: 6	Unit: 6	Unit Title: Ecosystem and Food Chain
LP: 18	Textbook Page/s: 59 – 61	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- understand Different Food Chains and some common Predators & their Prey.
- understand the Importance of a Balanced Ecosystem.

Prior Knowledge of Students:

- They can explain the main parts of Food Chain.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 Minutes)	**Proceedings**
5 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [**Note:** Always remember to say بسم الله الرحمن الرحيمout loud before you start any lesson or activity and say الحمد للهafter finishing it and encourage the students to do the same, too.]
26minutes	**Lesson Structure/Activities/Presentation:** Write the name of the unit on the whiteboard. Tell the students they will learn about the Different Food Chains, Predators, their Prey and the Importance of Balanced Ecosystem. **Activity 1:** Ask the students to open the page # 59 of textbook and ask them to solve the topic 'Activity' on the top of the page. Appreciate them if they draw the arrows correctly. After activity read aloud 'Different Food Chains' and explain it to the students with the help of the pictures. **Activity 2:** Turn on page # 60 & ask any student to read aloud 'Some Common Predators & Their Prey' and 'Competition between Living Things within an Ecosystem and explain it.

	Activity 3: After that ask another student to read the topic 'Importance of a Balanced Ecosystem' and explain it. During the reading walk in the class continuous and help them in pronunciation the words correctly and explain the complete topic. **Differentiated Learning**: Some students might find it hard to understand Predators and their Prey. Sit with them and explain it to them.
02 minutes	**Conclusion/Review:** Tell the students that balanced ecosystem is essential because biotic and abiotic are interdependent.
05 minutes	**Classwork/ Assessment:** Ask the students to solve the Exercise # 3 'True & False' on textbook page # 64.
02 minute	**Homework/Assignment:** Ask the students to find the answer of Q # (vii), (ix) and (x) of Exercise # 1 on page 63 in their notebook.

Lesson Plan 18

Subject: Science	Grade: 4	Term: 2nd
Week: 6	Unit: 6	Unit Title: Ecosystem and Food Chain
LP: 19	Textbook Page/s: 61 – 65	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- describe the Importance of Balanced Ecosystem and common predators & their prey.
- solve the exercise of the unit.

Prior Knowledge of Students:

- They can answer the question about the Food Chain & their parts, biotic and abiotic.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Write the name of the Unit and the topic 'Human Beings & the Preservation of Different Ecosystem'.
25 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Ask the students to open their textbook page no. 61 and read aloud the topic 'Human Beings & the Preservation of Different Ecosystem' and explain it to them. After that turn on to the page # 62 and give them a brief explanation/review of the whole chapter through 'Points to Remember' and 'Glossary' and reinforce all the main points of the Unit.

	Activity 2: Then move towards Ex. 2 (Fill in the blanks), Ex.4 (Match the predators with its prey) and Ex. 6 (Complete the chart of food chain) on pages 63, 64 & 65 respectively and guide them. Be on round and make sure no one copies each other's. **Differentiated Learning**: Walk around in the classroom. Some students might find it hard in solving exercises. Sit with them, guide and help them.
1 minute	**Conclusion/Review:** All the living and non-living things are essential for their survival.
(10mins)	**Classwork/ Assessment:** Covered in activity#2
4 minutes	**Homework/Assignment:** Assign the task to make a food chain model using craft paper. Also, color and label it with the help of a sample shown at the bottom on page # 65.

Unit-7- States of Matter

Unit Overview

The second unit, 'States of Matter' will help students to understand the States of Matter, i.e. solid, liquid and gas. They will be aware about the arrangement of particles in different states of matter.

Model Answers

Exercise 1

Answers of questions.

i. Matter is anything that occupies space and has mass.

ii. In solids, particles are closely packed thus solids cannot change their shape. In liquids there are some spaces between particles, therefore, can change their shape and in gases particles are far from each other, therefore, gases can be compressed easily.

iii. In solids, particles are very closely packed. They do not have enough space between them to move freely. Therefore, solids cannot change their shape easily.

iv. In gases, particles are far away from each other, since they are in constant motion.

v. Liquids do not have a definite shape. They change shape according to the shape of their container. For example, when you pour some water from a jug into a glass, it changes its shape according to the shape of the glass.

Exercise 2

Fill in the blanks with suitable words.

i. Solids have a definite shape.

ii. Molecules of gases are arranged in an irregular repeating pattern.

iii. Liquids are also called fluids.

iv. The scientific knowledge is not absolute or infallible.

v. The shape of a solid can be changed by applying force on it.

vi. The scientific knowledge is tentative and subject to change.

Exercise 3

Choose the correct options to fill in the blanks.

i. Matter is made up of tiny particles called molecules.
   a. Solids b. Liquids c. Molecules

ii. A gas has ability to be compressed.
   a. Liquid b. Gas c. Solid

iii. Matter is found in three states (solids, liquids and gases) on basis of the arrangement of their particles.
   a. Particles b. Volume c. Shape

iv. The molecules of liquids are arranged in an irregular pattern.
   a. Regular b. Irregular c. Fixed

v. As the human knowledge evolves, the scientific ideas and principles change too.
   a. Remain absolute b. Change c. Remain infallible

Lesson Plan 19

Subject: Science	Grade: 4	Term: 2nd
Week: 7	Unit: 7	Unit Title: State of Matter
LP: 20	Textbook Page/s: 66 – 68	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- understand about the Matter & Arrangement of Particles in Solids, Liquids & Matters.

Prior Knowledge of Students:

- They can differentiate the solid, liquid and gas.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker.
- A transparent bag and one or two blocks

Time Frame (40 minutes)	**Proceedings**
08 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Ask the students to open textbook's page # 66 and show the images given in section 'THINK' and ask them to identify states of matter in the given pictures and write them in the book. Then go on the 'Explore' section and ask the students to write the items in the picture and write them in front of the given options. During the exercise walk in the class and check whether the students are not copying with another student. Discuss and appreciate them.
22 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit and States of Matter on the whiteboard. Tell them they are going to learn about Matter, its States and Arrangement of Particles in Solids, Liquids and Gases. Ask students to open the textbook's page no.67. Read the first page of the unit aloud and explain to them first What Matter is?

	Ask a random student to read out the topic 'States of Matter' & 'Arrangement of Particles is Solids, Liquids and Gases' on the same page and explain it to them. Walk around the classroom and guide the students where needed. After completing the explanation turn on to page # 68 and ask another student to read 'Particle Model' & explain it. **Differentiated Learning**: Some students might find it hard to understand the concept of matter and particles. Show them with the help of sand and pour it in a transparent bag you have and tell them how they are close to each other or far away and make the arrangement.
02minutes	**Conclusion/Review:** Tell them that Allah has created all things and these all things are made up of matter and matter is made up of very tiny particles called molecules.
05 minutes	**Classwork/ Assessment:** Ask the students to open the page # 73 and solve the Exercise 4 and draw the arrangement of particles in the given boxes.
03 minutes	**Homework/Assignment:** Students will write the answers of question (i), (ii) & (iii) from page # 72, help them how they will find/write the answer.

Lesson Plan 20

Subject: Science	Grade: 4	Term: 2nd
Week: 7	Unit: 7	Unit Title: State of Matter
LP: 21	Textbook Page/s: 68 – 74	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- Explain the properties of Matter (Solids, Liquids & Gas).

Prior Knowledge of Students:

- describe the States of Matter & their arrangement of Particle.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- A glass of water, a bowl, a balloon and one or two blocks.

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Draw three boxes on the board and draw the arrangement of particles in them and ask the students to identify the matter according the arrangement of particles. Appreciate them if they answer correctly.
22 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit & topic on the whiteboard. Ask the students to open the textbook's page # 68, 'Properties of Matter' and ask the students to do the 'Activity' at the bottom of page # 68 and explain them & ask them to write their observation in the book **Activity 2:** After that move to textbook's page no.69 read the page and explain the shape of Solids and explain about its volume.

	Activity 3: Do the activity on page # 69, pour some water from a glass into a bowl & notice and write the answer in the book. After that explain the topic in detail. Activity 4: Now turn on page # 70 and do the activity; blow a balloon and ask the students if they observed any change and write their answer in the book. After that explain the topic in detail **Differentiated Learning**: Some students might find it difficult to understand the concept, explain them again with the hands on experience with the tools you have.
01 minutes	**Conclusion/Review:** Tell the student that only solid have the definite shape, whereas liquid and gas do not have a definite shape.
10minutes	**Classwork/ Assessment:** Students will write the answers of question (iv) & (v) from page # 72, help them to find/write the answers.
02 minutes	**Homework/Assignment**. Ask the students to solve the exercise 2, 3 & 5 on page # 72 & 73 in the book and do as homework.

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Unit-8- Light

Unit Overview

The eight unit, 'Light' will help to understand how it travels and difference between luminous and non-luminous objects. Further they will make aware about the phenomena associated with light, such as shadow, reflection or light, and eclipse and difference between solar eclipse and lunar eclipse.

Model Answers

Exercise 1

Answer the following questions.

1. Objects which can produce their own light are called luminous objects. Examples of luminous objects include the Sun and a light bulb.
2. Objects which cannot produce their own light are called non-luminous objects. For example, the Moon and our body are non-luminous objects.
3. An opaque object down not allow light to pass through it., The Sun and a wall are the examples of opaque.
4. When the Earth, the Sun and the Moon come in a line, an eclipse is formed. Eclipse are of two types: solar and lunar.
5. When light hits an object with a smooth polished surface, it reflects light better. A mirror and shiny metal surfaces are its examples.
6. Ibn Al-Haytham was a great Muslim scholar and scientist. He was known for his contribution to the principles of optics. He formulated laws of reflection. He also explained the working of the human eye.

Exercise 2

Fill in the blanks with suitable words.

i. The biggest natural source of light is the Sun.
ii. Firefly is a luminous insect.
iii. Many rays of light together make a beam of light.
iv. When the Moon comes between the Earth and the Sun, it blocks the light of the Sun. this is called a solar eclipse.
v. When the Earth comes between the Sun and the Moon, it blocks the light of the Sun. This is called a lunar eclipse.
vi. It is nonsense to deny the existence of reality of something just because we cannot know or identify it through our five senses.

Exercise 3
Write 'T' for a true and 'F' for a false statement.

i. The Moon is a luminous object. F
ii. light always travels in a straight path. T
iii. Reflection of light depends upon the surface of the object on which it strikes. T
iv. An opaque object allows light to pass through it. F
v. The Earth gets dark during a solar eclipse. T

Lesson Plan 21

Subject: Science	Grade: 4	Term: 2nd
Week: 8	Unit: 8	Unit Title: Light
LP: **22**	Textbook Page/s: 75-77	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- differentiate the luminous and non-luminous objects & light travels in a straight path.
- understand the shadow and position of Shadow.

Prior Knowledge of Students:

- They know about light and shadow.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Torch, a ball

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Open the textbook's page # 75, show the picture of 'Think' section to the students and ask them to write in the book that which object give out light on their own. Then move on to 'Explore' section and ask them to observe around them in the class and identify some light sources around them and write in their book. Appreciate their answers if they are correct.
25 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit on the whiteboard. Tell them they are going to learn about 'Light' today. Ask the students to open the textbook's page # 76 and read aloud the topic 'Know' section and explain it to them. Ask them to listen attentively. **Activity 2:** Ask randomly any student to read 'luminous and non-luminous objects' on textbook's page no.76. Explain them with the example of a bulb and sun. Then

	move on the page # 77 and randomly ask another student to read aloud the topic 'Light travels in a Straight Path' and 'Position of a Shadow' and explain it to them. Walk in the class continuously during the reading and ask them to listen carefully. **Activity 3:** Do the activity on page # 78 with the help of torch and book or a ball you have and explain them how the shadow form and its position. **Differentiated Learning:** Some students might find it difficult to understand the difference between luminous and non-luminous objects. Sit with them and explain them the difference between them and further how a shadow is formed and changes its position.
01 minutes	**Conclusion/Review:** Tell the students Allah has created the night and the day and the Sun and the Moon. (Surah Al-Anbiya: 33)
08 minutes	**Classwork/ Assessment:** Write the questions # (i) & (ii) of exercise 1 on page # 80 on the board and ask the students to write the answers in their notebook. Help them to find and write the answers in their note book.
01 minutes	**Homework/Assignment:** Students will write the answer of exercise 1, question (iii) & (iv) on page # 80 in their notebook.

Lesson Plan 22

Subject: Science	Grade: 4	Term: 2nd
Week: 8	Unit: 8	Unit Title: Light
LP: 23	Textbook Page/s: 78-82	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- understand the Reflection and Solar and Lunar Eclipse.

Prior Knowledge of Students:

- They can easily differentiate the luminous and non-luminous objects and how shadow is formed..

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 minutes)	**Proceedings**
03 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Draw some pictures of luminous and non-luminous objects on the board and ask the students to identify them. appreciate them if they answer correctly.
23 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit and topic 'Reflection' on the whiteboard. Open the textbooks on page no. 78 and randomly ask any student to read aloud the topic. Explain them well about reflection and eclipse. **Activity 2:** After that turn on page no. 79, and ask another student to read 'Solar Eclipse' & 'Lunar Eclipse', and explain them with the help of the picture given on textbook's page no. 79.

	Differentiated Learning: Some students might find difficulty to understand how solar and lunar eclipse occur. Sit with them and explain them with the picture on textbook's page no. 79.
01 minutes	**Conclusion/Review:** Tell the student that solar eclipse is harmful for your eyes, whereas lunar eclipse is not harmful.
12 minutes	**Classwork/ Assessment:** Write the question nos. (vi) & (vii) on board and ask students to write the answers in their notebook. and do the exercise 3 & 4, in their notebook. Help the students if they found any difficulty to solve it. Distribute the worksheet and ask them to solve it.
01 minutes	**Homework/Assignment:** Students will solve the exercises 2, 3 & 4 in textbook's page 81 & 82 in the book as home assignment.

Unit-9-Temperature and Heat

Unit Overview

The fourth unit, 'Temperature and Heat' will help students to understand 'Temperature and Heat'
They will also be made aware about how thermometer works, temperature scales, such as Fahrenheit and Celsius.

Model Answers

Exercise 1

Answer the following questions.

i. (a) **Temperature:** is the measure of hotness or coldness of an object.
(b) **Heat:** is the flow of thermal energy from one object to another object.
(c) **Temperature Scale:** temperature is measured in three different scales: Celsius Scale, Fahrenheit Scale & Kelvin Scale.

ii. A thermometer is a device which is used to measure the exact temperature of a body.

iii. (a) Wash a thermometer preferably with an antiseptic solution before and after using it.
(b) Do not place a thermometer near heat.
(c) Never break a thermometer to get the mercury.

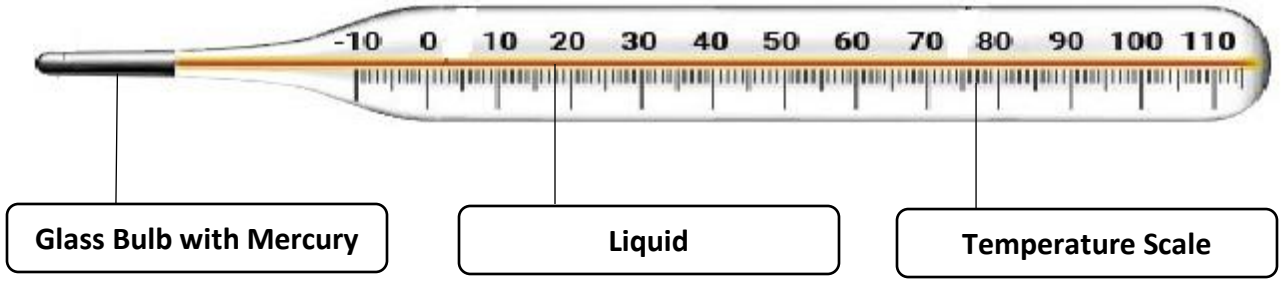
iv. Two scales of measuring temperature are Celsius and Fahrenheit.
On Celsius scale, the freezing point of water is 0 degree Celsius and the boiling point of water is 100 degrees Celsius. It is written as 0°C and 100°. On Fahrenheit scale, the freezing point of water is 32degrees Fahrenheit and the boiling point of water is 212 degrees Fahrenheit. it is written as 32°F and 212°F.

v. **(a) Warm Water:** When the thermometer is placed in contact with a hot object, the level of the mercury rises.
(b) Cold Water: When the thermometer is places in contact with a cold object, the level of the mercury falls.

Exercise 2
Fill in the blanks.

i. The faster the molecules move, the higher the temperature gets.
ii. Temperature is measured in three different scales.
iii. Heat flows from one object to another object.
iv. The freezing point of water is 0 °C.
v. The boiling point of water is 212 °F.

Exercise 3
Label the parts of a thermometer.



A Thermometer

Exercise 4
Look at the temperatures of the thermometers below. Write the readings in the given scales.

i. 42 °F
ii. -14°C
iii. 92 °F
iv. -26 °C
v. 16 °C
vi. 108 °F
vii. 88 °F
viii. 32 °F
ix. 29 °C

Exercise 5
Complete the following table with accurate temperatures.

Status	°C	°F
Freezing Point of Water	**0**	**32**
Boiling Point of Water	**100**	**212**

Lesson Plan 23

Subject: Science	Grade: 4	Term: 2nd
Week: 8	Unit: 10	Unit Title: Temperature and Heat
LP: 24	Textbook Page/s: 84 – 87	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- describe Temperature and Heat with the identification of Hot and Cold Object.

Prior Knowledge of Students:

- They can differentiate between Hot and Cold.

Teaching Aids/Materials/Resources:

- Textbook
- Board/Marker
- Worksheet

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]
25 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit on the whiteboard. Tell them they are going to learn about Temperature and Heat. Ask the students to identify the **Hot Objects** in the given pictures on textbook's page no. 84 in 'Think' section and tick ✓ in their book. Then move on the 'Explore' section and ask them to write the answer asked in the 'Explore' section in their book. Help them answering the question. **Activity 2:** Open the textbook's page # 85 and read the 'Know' section and explain them in details with the help of the pictures given on page no. 85 in the textbook.

	Tell the students that when molecule move fast the temperature gets high., and low temperature means the object is cold. **Activity 3:** Now turn on page no. 86 and ask randomly any student to read the topic 'Heat' & 'Thermometer' at page # 86 and explain it to them. During reading walk in the class continuously and correct the pronunciation of the students. Activity 4: Ask the students to rub their hands together for a few minutes, and ask them to write in the book, what do they feel? **Differentiated Learning:** Some students might find it difficult to understand the concept of thermal energy, explain them with the example of ice cubes given on page no. 86, and ask them if they have understood.
01 minutes	**Conclusion/Review:** Tell the students that heat transfer from one place to another place by three methods. 1. Conduction, 2. Convection & 3. Radiation.
08 minutes	**Classwork/ Assessment:** Write question (i) & (ii) of exercise # 1 on white board and ask the students to find the answer and write it in their notebook. Guide them to find and answer of the questions.
01 minutes	**Homework/Assignment:** Students will read (review) the topics Hot and Cold Objects and Thermometer and worksheet for homework.

Lesson Plan 24

Subject: Science	Grade: 4	Term: 2nd
Week: 9	Unit: 10	Unit Title: Sound
LP: 25	Textbook Page/s: 87 – 91	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- explain the difference between simple and higher plants.

Prior Knowledge of Students:

- They can explain classification of plant kingdom.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- First aid box

Time Frame (40 minutes)	**Proceedings**
03 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Draw some pictures of hot and cold objects on the board and ask the students to identify the cold and hot objects. Appreciate them if they answer correctly.
23 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit and topic on the board. Tell them they will learn about the 'Safety Measures While Using a Thermometer' and about the 'Temperature Scale' today. Ask the students to open textbook's page no. 87 and read aloud the topic 'Safety Measures While Using a Thermometer' and explain it to the students. After that randomly ask a student to read the topic 'Temperature Scale' aloud. Stop the student where necessary and explain it to them.

	Activity 2: Take the students to the nearby garden (or a place within school where different plants re available. The teacher will make them observe different plants and analyze the differences and similarities in flowering and non-flowering plants and simple and Higher plants on the basis of what they learnt in this unit. **Activity 3:** Activity will be done in the class as per instructions given on the textbook's page no. 92. **Differentiated Learning**: Some students might find it hard to understand the different scales of temperatures. Sit with them and explain them with the help of the picture on page no. 40 and help them to understand.
01 minutes	**Conclusion/Review:** Tell the students that the invention of thermometer is generally credited to an Italian scientist Galileo.
12 minutes **Science Lab**	**Classwork/ Assessment:** Students will be taken to the Science Laboratory and will perform an experiment with the help of the instructions given on the textbook's page no. 90-91.
01 minutes	**Homework/Assignment:** Students will answer the question no. (iii), (iv) & (v) of exercise no. 1 on page # 89 in their note book from home. Students will also complete the exercise no. 2, 3, 4 & 5 in their textbook on page no. 89 & 90 as home assignment.

Unit-10-Sound

Unit Overview

The tenth unit, 'Sound' will help students to understand that it is produced by vibration. They will also made aware that which mediums are required to travel.

The students will be made aware about identification of sounds on the basis of their intensity and the concept of pitch of a sound (high-pitched and low-pitched)

Model Answers

Exercise 1
Answer the following questions.

i. A sound is produces by a vibrating body. A vibration is a quick, repeated back and forth movement of particles.
ii. Sound needs a medium to travel. It travels at different speed through different materials and in all directions. The medium through which sound travels are solids, liquids or gases.
iii. The intensity is the loudness and softness of a sound. A loud sound is high in volume, for example a car's horn. A soft sound is low in volume, for example, the ticking of a clock.
iv. The pitch of a sound means how high or low the sound is.
v. Some sounds travel fastest through solids because their molecules are tightly packed.
vi.

Exercise 2
Fill in the blanks with suitable words.

i. When an object vibrates, it produces sound.
ii. An object that vibrates fast makes high sound.
iii. The loudness and softness of a sound is called pitch.
iv. A sound needs a medium to travel.
v. Sound waves travel very fast through water.

Exercise 3
Circle the correct answer.

i. Sound is produces by _____.
   a. Vibrating objects
   b. invertebrates
   c. plants

ii. The intensity of a sound is related to its _____.
   a. speed
   b. loudness and softness
   c. medium

iii. The pitch of a sound is related to _____.
   a. travelling of sound
   b. loud and soft sound
   c. high and low sound

iv. A sound cannot pass through _____.
   a. solids
   b. gases
   c. vaccum

Exercise 4

Sound of a railway engine, sound of a car's horn, sound of an aeroplane, whisper, sound of a cat, roar of a lion, sound of a violin, ticking of a clock, sound of a waterfall, sound of a piano.

No.	Loud Sound	Soft Sound
1.	Sound of a railway engine	Whisper
2.	Sound of a car's horn	Sound of cat
3.	Sound of an aeroplane	Sound of violin
4.	Roar of a lion	Ticking of a clock
5.	Sound of a waterfall	Sound of a piano

Lesson Plan 25

Subject: Science	Grade: 4	Term: 2nd
Week: 9	Unit: 10	Unit Title: Sound
LP: 26	Textbook Page/s: 93, 94, & 96	Duration: 40 minutes
Teacher:	School	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- describe how sound is produced and what it needs to travel.

Prior Knowledge of Students:

- They can identify the high or low sound.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- A tuning fork, a rubber mat and a bowl of water with two steel spoons.

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Ask the student to open their textbook's page no. 93 and look at the 'Think' section. Ask them to tick the ✓ below each picture in textbook. Then move on to 'Explore' section and do the activity as instructed in the textbook and ask the students to right the answer/observation.
28 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit on the whiteboard. Tell them they are going to learn the 'How is Sound produced' & 'What does it need to travel'. Tell them that measuring unit of a sound (loudness or softness) is **decibel (DB).** **Activity 2:** Do the activity with the help of tuning fork as instructed on the textbook's page no. 94 and ask the students to write their answer/observation in the book.

	Activity 3: Randomly ask a student to read aloud the topic 'What Does a Sound Need to Travel?' on page no. 95 & 95 and explain it to them. Walk around in the class continuously during the reading and correct the pronunciation if delivered incorrect and ask them to repeat after you. Do the activity of 'Solids' as instructed on the textbook's page no 95. **Activity 4:** Ask other student to read aloud the topic 'Liquid' on page # 95 and explain it to them, and do the activity on the top of page no. 96. Walk around in the class continuously during the reading and correct the pronunciation if delivered incorrect and ask them to repeat after you. **Differentiated Learning:** Some students might find it difficult to understand the medium of travelling of sound. Sit with them and explain them with the help accessories you have.
01 minute	**Conclusion/Review:** Tell the students that sounds travel fastest through solids because their molecules are tightly packed.
05 minutes	**Classwork/ Assessment:** The students will answer the question no. (i) & (ii) of exercise 1 textbook's page no. 98**.** Help them to explore and write the answer in the notebook.
01 minute	**Homework/Assignment:** Student will review textbook's page # 94 & 95 and they will also solve the worksheet as home assignment.

Lesson Plan 26

Subject: Science	Grade: 4	Term: 2nd
Week: 9	Unit: 10	Unit Title: Sound
LP: 26	Textbook Page/s: 96-100	Duration: 40 minutes
Teacher:	School	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- understand the Intensity of a Sound as well as Pitch of a Sound.

Prior Knowledge of Students:

- They know the mediums of Sound.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- 30 centimeters (cm) long steel ruler, a desk and a pencil.

Time Frame (40 minutes)	**Proceedings**
05 minutes	**Opening/Motivation/Warm-up:** Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Review the previous lesson and ask some random students about the mediums of Sounds. Listen to their responses and appreciate them if they answer correctly.
15 minutes	**Lesson Structure/Activities/Presentation:** **Activity 1:** Write the name of the unit on the whiteboard. Tell them they are going to learn about the 'Intensity of a Sound' today. Ask the students to open their textbook page no.96 and read aloud and explain the classification of vertebrates. **Activity 2:** Ask a student randomly to read the topic on textbook's page # 96 & 97. During reading walk around the class and help them if he found difficulty in reading or pronouncing the difficult words and ask them to repeat after you.

	Activity 3: Read aloud the points to remember and glossary on page no. 97. **Differentiated Learning:** Some students might find difficulty in understanding the intensity of a Sound. Sit with them, and explain to make loud or soft sound.
01 minute	**Conclusion/Review:** Tell the students the pitch of a sound means how low or high the sound is.
15 minutes **Science Lab**	**Classwork/ Assessment:** Tale the students to the Science Lab and perform an experiment as per instruction given on page no. 100
01 minute	**Homework/Assignment:** Students will answer the question (iii), (iv) and (v) of exercise 1 on textbook's page no. 98 in their notebook. Students will also solve the exercise 2, 3 & 4 on pages 98 & 99 in their textbook as homework.

Unit 6- Ecosystem and Food Chain-Worksheet

Lesson Plan 17

Circle the correct answer.

i. The animals that get their food directly from plants are called:
   a. Secondary Consumer
   b. Primary Consumer
   c. Tertiary Consumer

ii. Plants are:
   a. Decomposer
   b. Primary Consumer
   c. Producer

iii. The essential part for all food chains is:
   a. Sun
   b. Air
   c. Water

iv. Giraffes are an example of:
   a. Omnivores
   b. Carnivores
   c. Herbivores

v. Secondary Consumers are eaten by:
   a. Primary Consumers
   b. Producers
   c. Tertiary Consumer

vi. Which one of the following is a Secondary Consumer?
   a. Frog
   b. Cat
   c. Eagle

vii. Plants get energy from:
   a. Soil
   b. Water
   c. Sunlight

viii. Dead plants and animals are an example of:
   a. Producer
   b. Decomposer
   c. Primary Consumer

Unit 9 - Temperature and Heat - Worksheet

Lesson Plan 24

Write 'Hot' for the hot objects and 'Cold' for the cold objects in the given boxes.

Unit 10 - Sound- Worksheet

Lesson Plan 26

Tick ✓ for the correct answer and ✗ for the wrong answer.

1. **As the body stops vibrating, the sound also stops. _____**
2. **A vacuum is a space where there is no air. _____**
3. **A sound can travel through solids, liquids or gases. _____**
4. **Sound can be heard in Space. _____**
5. **Motor cycle has a low sound. _____**
6. **We cannot hear the sound underwater when we are swimming. _____**
7. **Vibration of butterfly wings can be heard by human ears. _____**
8. **A sound can travel through walls and doors. _____**
9. **An object that vibrates fast makes low sound. _____**
10. **Sound of a door bell travel through air. _____**

Unit-Assessments

Unit-6 Ecosystem and Food Chain

Name: _____ **Roll No:** _____ **Date:** _____

Time: 10 Minutes	**Total Marks:** /10

Fill in the blanks with correct words. **/4**

i. Humans, animals & plants are _____ or living components of an ecosystem.

a) biotic b) abiotic

ii. Green plants prepare their food by _____.

a) Soil b) photosynthesis

iii. Humans & animals consume both plants and animals: hence they are called _____.

a) consumers b) producers

b) _____ shows how energy is transferred from one living thing to another in the form of food.

a) food web b) food chain

Question B

Match the picrtures with their correct consumers. **/4**

PRIMARY CONSUMERS

SECONDARY CONSUMERS

TERTIARY CONSUMERS

Question C

Answer the questions. **/2**

1. Define a food chain?

Answer: _____

2. Define an ecosystem?

Answer: _____

Unit-7 States of Matter

Time: 10 Minutes	**Total Marks:** /10

Name: _____ **Roll No:** _____ **Date:** _____

Question A

Fill in the blanks with correct words. **/4**

i. _____ have a definite shape.
a) volume b) solids

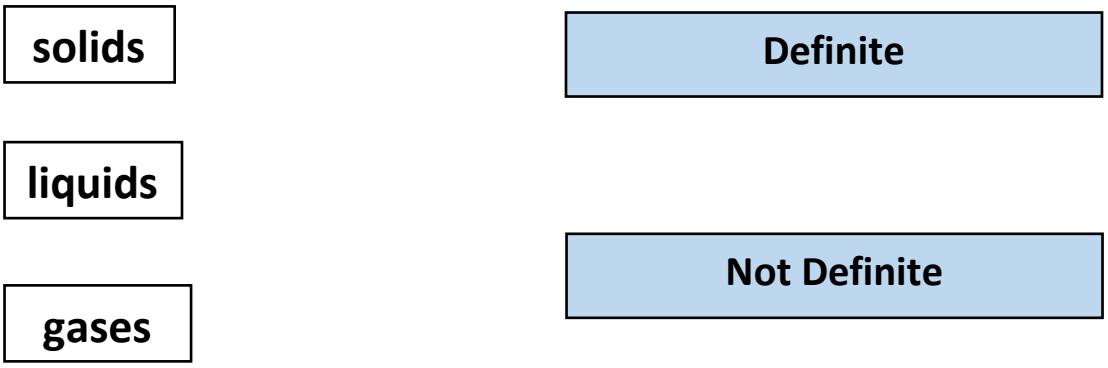
ii. _____ do not have a definite shape.
a) liquids b) solids

iii. In _____, particles are far apart from each other.
a. gases b) liquids

iv. _____ do not change their shape.
b) solids b) liquids

Question B

Draw a line to match correct types of shape. **/3**



Question C

Answer the questions. **/3**

1. Define matter?

Answer: _____

2. Why do the particles of a gas spread in all directions?

Answer: _____

3. Write the properties of liquids.

Answer: _____

Unit-8 Light

Name: _____ **Roll No:** _____ **Date:** _____

Time: 10 Minutes	**Total Marks:** /10

Question A

Fill in the blanks with correct words. **/4**

i. Objects which can produce their own light are called _____.

a) luminous objects b) non-luminous objects

ii. An opaque object _____ light to pass through it

a) does not allow b) allows

iii. _____ occurs when moon comes between the Earth and the Sun.

a) Solar eclipse b) lunar eclipse

b) Objects which cannot produce their own light are called _____.

a) luminous objects b) non-luminous objects

Question B

Match the luminous and non-luminous objects. **/3**

Luminous objects

Non-luminous objects

Question C

Answer the questions. **/3**

1. How is shadow formed?

Answer: _____

2. Define eclipse.

Answer: _____

3. Why does light reflect?

Answer: _____

Unit 9 Temperature and Heat

Name: _____ **Roll No:** _____ **Date:** _____

Time: 10 Minutes	**Total Marks:** /10

Question A

Write 'T' for true and 'F' for a false statement. **/4**

i. Temperature is the measure of hotness or coldness of an object.

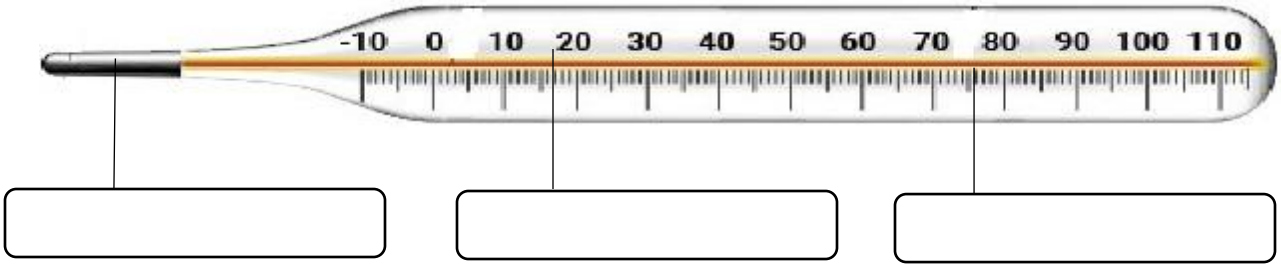
ii. Objects which have high temperature are cold objects.

iii. Mercury is a white colored metal.

iv. All matter is made up of tiny particles called molecules.

Question B

Label the parts of a thermometer. **/3**



A Thermometer

Question C

Answer the questions. **/3**

1. What is a thermometer?

Answer: _____

2. Define temperature.

Answer: _____

3. What would happen if you place a thermometer in a bowl of the warm water?

Answer: _____

Unit 10 Sound

Name: _____ **Roll No:** _____ **Date:** _____

Time: 10 Minutes	**Total Marks:** /10

Question A

Fill in the blanks with correct words. **/3**

i. When a body vibrates _____, it produces a high sound. (slow, fast)

ii. The volume of a sound is measured in _____ units. (decimal, decibel)

The _____ of a sound means how high or low the sound is. (vibration, pitch)

Question B

Tick ✓ for the correct answer and ✗ for the wrong answer. **/4**

i. A vacuum is a space where there is no air. _____

ii. Sound can be heard in Space. _____

iii. A sound can travel through walls and doors. _____

iv. An object that vibrates fast makes low sound. _____

Question C

Answer the questions. **/3**

1. What does a sound need to travel?

Answer: _____

2. What is meant by the pitch of a sound?

Answer: _____

3. How is sound produced?

Answer: _____

Terminal Assessment Paper

Second Term

2nd Term Assessment **Time: 40 Minutes**

SCIENCE SERIES 4

Name: _____ **Roll No:** _____ **Date:** _____

Section	Section-I	Section-II	Practical Activities	Viva	Total
Maximum Marks	**40**	**10**	**05**	**05**	**60**
Obtained Marks					

Section-I

Question 1

Fill in the blanks with correct word. **/07**

i. Animals, humans, plants and other living things are _____. (abiotic, biotic)

ii. The _____ shows how energy is transferred from one living thing to another in the form of food. (food web, food chain)

iii. Matter is made up of very tiny particles called _____. (molecules, mass)

iv. _____ have a definite shape. (gas, solid)

v. A _____ is an example of reflection of light. It is an arch of different colours. (rainbow, shadow)

vi. Temperature is measured in _____ different sales. (two, three)

vii. _____ is a material or substance through which sound can travel. (vacuum, medium)

Question 2

Write 'T' for true and 'F' for false statement. **/08**

i. Sound cannot travel through solids, liquids or gases.

ii. The faster the molecules move, the higher the temperature gets.

iii. The boiling point of water is 312 °F.

iv. Firefly is a non-luminous insect.

v. The biggest natural source of light is the Moon.

vi. The Moon is a luminous object.

vii. Every living thing consumes food to get energy.

viii. Green plants are called producers.

Question 3

Enlist the names of five luminous objects. **/05**

1. _____ 3. _____ 5. _____

2. _____ 4. _____

Question 3

Match the predator on the left with its prey on the right. **/10**

PREDATORS	PREY
Fox	Fly
Lion	Rat
Shark	Rabbit
Spider	Small Fish
Snake	Zebra
Bear	Leaf
Rabbit	Carrot
Grasshopper	Berry
Rabbit	Lettuce

Question 4

Write the names of five cold objects and five hot objects. /05

i.	_____	**vi.**	_____
ii.	_____	**vii.**	_____
iii.	_____	**viii.**	_____
iv.	_____	**ix.**	_____
v.	_____	**x.**	_____

Question 5 **/05**

Match the sounds with the respective pictures.

Loud Sound	**Soft Sound**

Sound of railway engine

Sound of a cat's meow

Sound of a lion's roar

Sound of a violin

Sound of a thunder

Section-II

Question 6

Answer the questions. /10

1. **What are the biotic and abiotic components of an ecosystem?**

Answer:

_____

_____

2. **How are decomposers useful for plants and soil?**

Answer:

_____

_____

3. **Write the properties of liquids with examples.**

Answer:

_____

_____

4. **Define matter.**

Answer:

_____

_____

5. **How is a shadow formed?**

Answer:

_____

_____

6. **Why does light reflect? State examples of reflection from everyday life.**

Answer:

_____

_____

7. **Define temperature scale.**

Answer:

_____

_____

8. **Discuss the two scales of measuring temperatures.**

Answer:

_____

_____

9. What is meant by the pitch of a sound?

Answer:

_____

_____

10. How is sound produced?

Answer:

_____

_____

Question 7

Discuss the Ayah number 95 of Surah Al-An'am of the Holy Qur'an with reference to the concept of a food chain: /05

Answer:

_____

_____

_____

_____

_____

_____

_____

_____

Question 8 /05

Complete the following food chains.

PRIMARY SOURCE OF ENERGY	PRODUCER	PRIMARY CONSUMER		
	Plants			
	Producer	Primary Consumer	Secondary Consumer	
		Insects	Frog	
	Producer	Primary Consumer	Secondary Consumer	Tertiary Consumer
			Frog	Eagle