

SECOND TERM LESSON PLAN

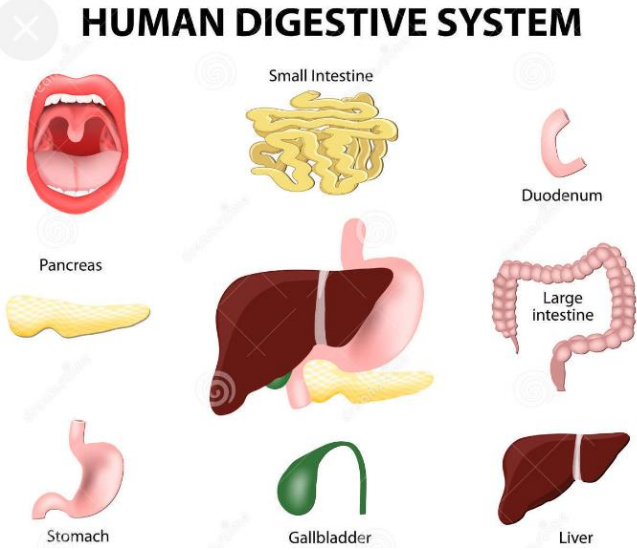
SCIENCE – B7

WEEK 1

Date: 13 TH MAY, 2022		Period:	Subject: Science
Duration: 50MINS			Strand: Systems
Class: B7	Class Size:		Sub Strand: The Human Body Systems
Content Standard: B7.3.1.1 Show an understanding of the concept of food, and the process of digestion and appreciate its importance in humans		Indicator: B7.3.1.1.1 Explain the concept of food and the need for humans to eat.	Lesson: 1 of 3
Performance Indicator: Learners can explain why humans need to eat.			Core Competencies: DL 5.1: CP 5.1: DL 5.1: DL 6.6: CP 5.8: CP 5.1:.
References: Science Curriculum Pg. 16-17			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Revise with learners to find out what they already know about food and food nutrients. Share performance indicators and introduce the lesson.		
PHASE 2: NEW LEARNING	Guide learners to explain what food is.  Revise with learners on the categories of food. i.e. Energy foods – cassava, bread, rice, etc. Body Building foods – cheese, eggs, milk, fish, etc. Maintenance foods – vitamins, minerals and water. Learners to discuss the nutrients found in food and talk about their sources. Examples: carbohydrates, vitamins, water, fats and oils, protein		Illustrations, the human body charts, etc.

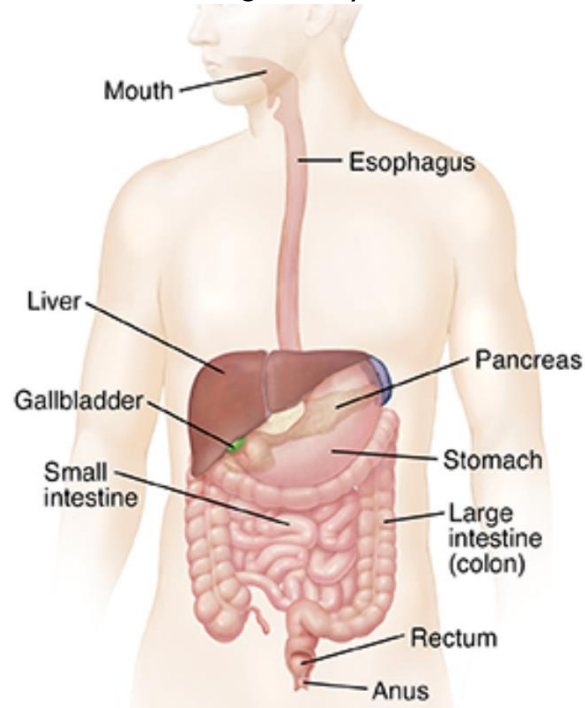
	Have learners talk about the importance of food nutrients Example: - Carbohydrates are source of energy to the body. - Fats deposit under the skin insulate the body against lost heat. Teacher compares and contrast the appearance of people who have been starved for some period of time with those who have been eating and look healthy and strong. Deduce from the comparison the importance of feeding in humans. <u>Assessment</u> - State all the food nutrients needed in a balanced diet. - What are food nutrients? - State three importance of food to the body.	
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Date: 13 TH MAY, 2022	Period:	Subject: Science	
Duration: 50MINS		Strand: Systems	
Class: B7	Class Size:	Sub Strand: The Human Body Systems	
Content Standard: B7.3.1.1 Show an understanding of the concept of food, and the process of digestion and appreciate its importance in humans		Indicator: B7.3.1.1.2 Examine what happens to food at the stages of digestion in humans	Lesson: 2 of 3
Performance Indicator: Learners can describe the stages of the digestive system.		Core Competencies: DL 5.1: CP 5.1: DL 5.1: DL 6.6: CP 5.8: CP 5.1:.	
References: Science Curriculum Pg. 16-17			

Phase/Duration	Learners Activities	Resources
PHASE 1: STARTER	Review topics on digestion in humans from Primary 6. Observe and identify the parts of the alimentary canal of humans from models and charts. Share performance indicators and introduce the lesson.	
PHASE 2: NEW LEARNING	Brainstorm to bring out the meaning of the term digestion. Guide learners to explain why a digestive system is necessary in humans. Guide learners to identify the parts of the alimentary canal in a drawing of the digestive system. HUMAN DIGESTIVE SYSTEM  Guide learners to research and describe what happens to food e.g. a piece of boiled yam / cassava / plantain / cocoyam / bread, egg, meat, orange, palm	Illustrations, the human body charts, etc.

oil and many others when it gets into the mouth, stomach, large and small intestines.

Draw and label the digestive system of humans.



Assessment

1. What is digestion?
2. Identify the organs of the digestive system.
3. State the functions of any three organs of the digestive system.

**PHASE 3:
REFLECTION**

Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson.

Take feedback from learners and summarize the lesson.

SECOND TERM LESSON PLAN

SCIENCE – B7

WEEK 2

Date: 20 th MAY, 2022		DAY:	Subject: Science
Duration: 50MINS			Strand: Systems
Class: B7	Class Size:		Sub Strand: The Human Body Systems
Content Standard: B7.3.1.1 Show an understanding of the concept of food, and the process of digestion and appreciate its importance in humans		Indicator: B7.3.1.1.3 Identify the end product of digestion of starchy, protein and oily foods and explain how absorption of the digested food occurs in humans	Lesson:
Performance Indicator: Learners can identify the end product of digestion			Core Competencies: DL 5.1: CP 5.1: DL 5.1: DL 6.6: CP 5.8: CP 5.1:.
References: Science Curriculum Pg.18			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Revise with learners on the previous lesson, using questions and answers. Introduce the lesson by sharing the performance indicators.		
PHASE 2: NEW LEARNING	Engage learners to discuss the processes involved in digestion. Example: physical and chemical process. Observe and describe how digested food is absorbed into the body of humans using animation. Learners to discuss the digestion of food in the mouth and the stomach. Have learners to identify the role of saliva in digestion. Example: Saliva contains an enzyme known as salivary amylase which breaks down starch into maltose or sugar. Draw a flow chart to show how starch is digested to sugar, protein is digested to amino acids and oils are digested into fatty acids in the stomach. Perform practical tests on food: starch, glucose, protein and fats and oils. <u>Assessment</u> I. Define the following terms a. Ingestion b. Digestion c. Egestion		Illustrations, the human body charts, etc.

	2. Briefly describe how digestion of food takes place in the stomach.	
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Date: 20 th MAY, 2022		DAY:	Subject: Science
Duration: 50MINS			Strand: Systems
Class: B7	Class Size:		Sub Strand: The Human Body Systems
Content Standard: B7.3.1.1 Show an understanding of the concept of food, and the process of digestion and appreciate its importance in humans		Indicator: B7.3.1.1.3 Identify the end product of digestion of starchy, protein and oily foods and explain how absorption of the digested food occurs in humans	Lesson:
Performance Indicator: Learners can identify the end product of digestion			Core Competencies: DL 5.1: CP 5.1: DL 5.1: DL 6.6: CP 5.8: CP 5.1:.
References: Science Curriculum Pg.18			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Revise with learners on the previous lesson, using questions and answers. Introduce the lesson by sharing the performance indicators.		
PHASE 2: NEW LEARNING	Observe and describe how digested food is absorbed into the body of humans using animation. Learners to discuss the digestion of food in the small intestine and the big intestine. Have learners to identify the role of enzymes in digestion. Example: Pancreatic amylase, pancreatic lipase and protease. Draw a flow chart to show how starch is digested to sugar, protein is digested to amino acids and oils are digested into fatty acids in the small intestine and the big intestine. Perform practical tests on food: starch, glucose, protein and fats and oils. Guide learners to describe what happens to the end products of digestion in humans Mention the end products of digestion. Explain that the end products of digestion are absorbed into the blood stream. Detailed treatment of absorption not required. Guide learners to discuss how the end-products of digestion are used in the body. Learners to discuss how undigested food substances are removed from the body.		Illustrations, the human body charts, etc.

	<u>Assessment</u> 1. Mention the end products of the following a. Protein digestion b. Carbohydrate digestion c. Fats and oil digestion 2. List in order, the parts of the digestive system of humans. 3. Describe briefly what happens to a morsel of kenkey in the mouth during eating. 4. What are digestive enzymes? 5. Mention any three examples of digestive enzymes.	
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

WEEKLY LESSON PLAN – B7

WEEK 3

Date: 27 th MAY, 2022		DAY :	Subject: Science
Duration:			Strand: Systems
Class: B7	Class Size:		Sub Strand: The Solar System
Content Standard: B7.3.2.1 Demonstrate knowledge of the inner planets of the solar system and understand their movement in the system.		Indicator: B7.3.2.1.1 Identify the inner planets of the solar system and describe their properties	Lesson: 1 of 4
Performance Indicator: Learners can describe the components of the solar system			Core Competencies: DL 5.1: CC 8.1: CC 8.2: DL 5.3: CP 5.8: CI 5.1: CI 5.3: CI 6.6:
References: Science Curriculum Pg. 19 - 20			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Revise with learners to find out what they already know about the solar system. Share performance indicators and introduce the lesson.		
PHASE 2: NEW LEARNING	Brainstorm learners for meaning of solar system. The solar systems made up of the sun, eight planets and other heavenly bodies. Guide learners to describe the components of the solar system. Sun – the sun is the center of the solar system Planets – it includes Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune. Heavenly bodies – Asteroids, Meteors, Meteorites and Comet. Identify and describe what constitutes the inner planets of the solar system using pictures, videos, etc. The four inner planets are Mercury, Venus, Earth and Mars. They are made of rocks. Guide learners to describe each of the planet in the solar system.		Pictures of the moon, sun, stars and the planets.



Assessment

1. What is the solar system?
2. List the members of the solar system in order of their distances from the sun.
3. What is a planet?

PHASE 3: **REFLECTION**

Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson.

Take feedback from learners and summarize the lesson.

Date: 27 th MAY, 2022		DAY :	Subject: Science
Duration:			Strand: Systems
Class: B7	Class Size:		Sub Strand: The Solar System
Content Standard: B7.3.2.1 Demonstrate knowledge of the inner planets of the solar system and understand their movement in the system.		Indicator: B7.3.2.1.1 Identify the inner planets of the solar system and describe their properties	Lesson: 2 of 4
Performance Indicator: Learners can state the components of the inner planet of the solar system			Core Competencies: DL 5.1: CC 8.1: CC 8.2: DL 5.3: CP 5.8: CI 5.1: CI 5.3: CI 6.6:
References: Science Curriculum Pg. 19 - 20			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Revise with learners on what was studied in the previous lesson. Share the performance indicators with learners and introduce the lesson.		
PHASE 2: NEW LEARNING	Have learners talk about the features of the inner planets Example: <u>Features of the inner planets</u> 1. All the inner planets are made of rocks. 2. The inner planets do not have rings around them. 3. They do not have moon around them. 4. The inner planets have shorter orbits around the Sun, so they spin very fast. Guide learners to describe the galaxy, milky way, and elliptical shape of the paths of movement of the inner planets. A large group of stars in the universe is called a <u>Galaxy</u> . The sun is a star belonging to the galaxy known as the <u>Milky Way</u> .  Design and construct a model of the solar system.		Pi Pictures of the moon, sun, stars and the planets. ctures and Charts

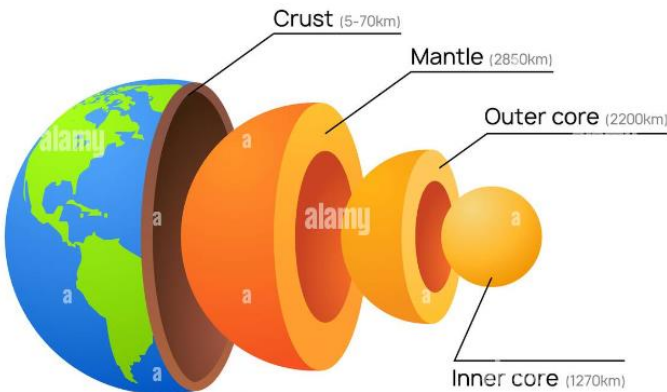
	Engage learners in a discussion to talk of the differences between planets and stars. <table><tr><th>Planet</th><th>Star</th></tr><tr><td>Does not produce light and heat</td><td>Produces light and heat</td></tr><tr><td>Does not twinkle</td><td>Usually twinkle</td></tr><tr><td>Moves round a star</td><td>Does not move</td></tr><tr><td>It is solid in nature</td><td>It is made up of burning gases</td></tr></table> <u>Assessment</u> 1. Name three other heavenly bodies that can be found in the solar system. 2. Identify the components of the inner planets of the solar system. 3. State three features of the inner planets.	Planet	Star	Does not produce light and heat	Produces light and heat	Does not twinkle	Usually twinkle	Moves round a star	Does not move	It is solid in nature	It is made up of burning gases	
Planet	Star											
Does not produce light and heat	Produces light and heat											
Does not twinkle	Usually twinkle											
Moves round a star	Does not move											
It is solid in nature	It is made up of burning gases											
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.											

SECOND TERM WEEKLY LESSON NOTES

WEEK 4

Date: 3 rd June, 2022		DAY :	Subject: Science
Duration:			Strand: Systems
Class: B7	Class Size:		Sub Strand: The Solar System
Content Standard: B7.3.2.1 Demonstrate knowledge of the inner planets of the solar system and understand their movement in the system.		Indicator: B7.3.2.1.2 Discuss the properties and the relative motions of the planets Mercury and Venus	Lesson: 2 of 4
Performance Indicator: Learners can state the components of the inner planet of the solar system			Core Competencies: DL 5.1: CC 8.1: CC 8.2: DL 5.3: CP 5.8: CI 5.1: CI 5.3: CI 6.6:
References: Science Curriculum Pg. 19 - 20			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Revise with learners on what was studied in the previous lesson. Share the performance indicators with learners and introduce the lesson.		
PHASE 2: NEW LEARNING	Guide learners to outline properties peculiar to each of the planets Mercury and Venus. <u>Mercury:</u> Mercury is the closest planets to the Sun. The temperature on it is too high to support life. It takes 88days to orbit the Sun. <u>Venus:</u> Venus is the second planet from the Sun. It is surrounded by an atmosphere of thick gases that traps heat from the Sun, so it is even hotter than Mercury. The distance between the Sun and Venus is 108 million km. It takes 225 days to orbit the Sun <u>Earth:</u> It is the third planet from the sun. The Earth is planet we live on. The distance from the Sun to the Earth is 150 million km. It takes 365 quarter days to orbit the Sun. It is the only planet that has the ability support/sustain life because of; 1. the presence of oxygen 2. the presence of water 3. suitable temperature 4. the presence of the ozone layer that protect plants and animals including humans from the harmful ultra-violet rays from the sun. <u>Mars:</u>		Pi Pictures of the moon, sun, stars and the planets. pictures and Charts

	Mars has a reddish, rocky surface and is sometimes called the red planet. It is the second smallest planet in the solar system after Mercury. Guide learners to describe the movement of the planets Mercury and Venus around the Sun. • Mercury spins slowly on its axis and complete one rotation every 59 earth days. But when mercury is moving faster in its elliptical orbit around the sun, each rotation is not accompanied by sunrise and sunset like it is on most other planets. • Most planets rotate on their axes in an anti-clockwise direction, but Venus rotates clockwise in retrograde rotation once every 243 earth days; the slowest rotation compared to any other planet.	
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

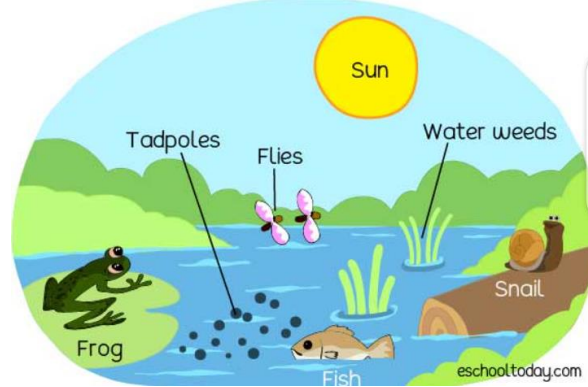
Date: 3 rd June, 2022		DAY :	Subject: Science
Duration:			Strand: Systems
Class: B7	Class Size:		Sub Strand: The Solar System
Content Standard: B7.3.2.1 Demonstrate knowledge of the inner planets of the solar system and understand their movement in the system.		Indicator: B7.3.2.1.2 Discuss the properties and the earth	Lesson: 2 of 4
Performance Indicator: Learners can state the components of the inner planet of the solar system			Core Competencies: DL 5.1: CC 8.1: CC 8.2: DL 5.3: CP 5.8: CI 5.1: CI 5.3: CI 6.6:
References: Science Curriculum Pg. 19 - 20			
Phase/Duration	Learners Activities	Resources	
PHASE 1: STARTER	Revise with learners on what was studied in the previous lesson. Share the performance indicators with learners and introduce the lesson.		
PHASE 2: NEW LEARNING	Guide learners to describe the structure and layers of the planet earth. Example: The Earth is made up of three layers • The crust • Mantle • Core. Using pictures, let learners identify the layers of the earth.  Guide learners to classify satellites into natural and artificial. Engage learners to brainstorm the difference between natural and artificial satellite. Learners to discuss the uses of artificial satellites.	Pi Pictures of the moon, sun, stars and the planets. pictures and Charts	

	<u>Assessment</u> 1. What is an orbit with respect to the solar system? 2. What is satellite? Name the planet whose satellite is the moon.. 3. What keeps the earth and other planets in their orbits?	
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

SECOND TERM WEEKLY LESSON NOTES

WEEK 5

Date: 10 th JUNE, 2022		DAY:	Subject: Science
Duration:			Strand: Systems
Class: B7	Class Size:		Sub Strand: Ecosystem
Content Standard: B7.3.3.1 Recognize the components of and interdependences in an ecosystem, and appreciate their interactions		Indicator: B7.3.3.1.1 Analyze the components of ecosystems and identify the interactions within	Lesson: 1 of 3
Performance Indicator: Learners can analyze the components of ecosystems and identify the interactions within			Core Competencies: CC 9.6: CC 8.1: CC 8.4: DL 5.5: DL 5.6: CP 5.1:
References: Science Curriculum Pg. 21-22			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Using questions and answers, review to find out what learners already know about ecosystem. Share learning indicators and introduce the lesson.		
PHASE 2: NEW LEARNING	Describe an ecosystem as a self-sustaining unit in which components interact. E.g. a pond, a forest and many others. <i>Ecosystem: An ecosystem is defined as the interactions between living and non-living things in a given area.</i> Guide learners to identify some other terminologies in Ecology. Example: Population: A population refers the total number of a particular species living in a habitat. Community: A community refers to all of the populations of different species that live in a particular habitat. Guide learners to discuss what Habitat means and types. A habitat is the natural dwelling place of an organism.		Pictures and Charts



Have learners group ecosystems into terrestrial, aquatic and arboreal categories.

Aquatic habitat: *This refers to water as the natural dwelling place of an organism. The water bodies like rivers, lakes, seas, oceans. The organisms that live in water are aquatic animals. It is mainly of three kinds: freshwater, marine, coastal and estuarine*

Terrestrial habitat: *This refers to the land as the natural home of an organism. Examples of terrestrial habitats include rainforest, grassland, dessert and arboreal.*

Identify and list the components, such as biotic and abiotic, of each category of ecosystem.

Assessment

1. What is Ecosystem?
2. Explain the following terms used in ecology.
 - a. Environment
 - b. Population
 - c. Community
 - d. Ecosystem

PHASE 3: REFLECTION

Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson.

Take feedback from learners and summarize the lesson.

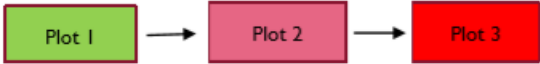
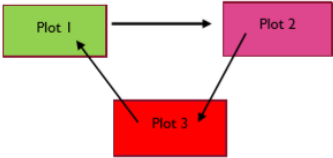
Date: 10 th JUNE, 2022		DAY:	Subject: Science
Duration:			Strand: Systems
Class: B7	Class Size:		Sub Strand: Ecosystem
Content Standard: B7.3.3.1 Recognize the components of and interdependences in an ecosystem, and appreciate their interactions		Indicator: B7.3.3.1.1 Analyze the components of ecosystems and identify the interactions within	Lesson: 2 of 3
Performance Indicator: Learners can analyze the components of ecosystems and identify the interactions within			Core Competencies: CC 9.6: CC 8.1: CC 8.4: DL 5.5: DL 5.6: CP 5.1:
References: Science Curriculum Pg. 21-22			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Using questions and answers, review with learners what was studied in the previous lesson. Share learning indicators and introduce the lesson.		
PHASE 2: NEW LEARNING	Engage learners to discuss the interactions between Abiotic and Biotic Factors. Example: • <i>Reptiles sit on hot rocks in the sunlight to warm their bodies.</i> • <i>Animals such as termites, ants and rabbits dig or burrow in the ground for shelter.</i> Learners to research on the Interdependence of Living Organisms in The Ecosystem. Example: <i>1. Snakes rely on the leaves and ground coloration to camouflage themselves from predators.</i> <i>2. Animals use plants as a form of shelter within their environment. For example, many birds reside within nests on the trees. They build their nests from twigs and sticks.</i> Have learners demonstrate the terms predation, parasitism, competition, commensalism and mutualism in relation to how organisms interact. • <i>Predation: In these interactions, one organism benefits while the other is negatively affected.</i> • <i>Parasitism is a relationship in which one organism is helped while the other is harmed.</i> • <i>Competition: Both organisms are negatively affected in some way due to their interactions</i> • <i>Commensalism: In this interaction one organism benefits while the other is neither harmed nor gains.</i> • <i>Mutualism: Both organisms benefit from their interactions.</i> Guide learners to explain how the components of the different ecosystems affect one another.		Pictures and Charts

	<u>Assessment</u> 1. State the components of an ecosystem 2. What is a species? 3. Give three examples of organisms living in each of the following habitats a. Land b. sea c. pond	
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

SECOND TERM WEEKLY LESSON NOTES

WEEK 6

Date: 17 th JUNE, 2022		DAY:	Subject: Science
Duration:			Strand: Systems
Class: B7	Class Size:		Sub Strand: Farming Systems
Content Standard: B7.3.4.1 Demonstrate an understanding of the differences among the various farming systems: Land Rotation, Crop Rotation, Mixed Cropping, Mixed Farming, and Organic Farming		Indicator: B7.3.4.1.1 Examine and discuss the differences among the various farming systems	Lesson: 1 of 2
Performance Indicator: Learners can discuss the differences among the various farming systems			Core Competencies: CC 9.6: CC 8.1: CC 8.4: DL 5.5: DL 5.6: CP 5.1:
References: Science Curriculum Pg. 23-24			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Using questions and answers, review to find out what learners already know about farming system. Share learning indicators and introduce the lesson.		
PHASE 2: NEW LEARNING	Brainstorm learners for the meaning of farming systems. <i>Farming system refers to all the different methods which are used to produce crops and or animal.</i> Learners to mention some farming methods being practiced in their community. Example: <i>Shifting cultivation</i> <i>Land Rotation</i> <i>Crop Rotation</i> <i>Mixed Cropping</i> <i>Mixed Farming</i> <i>Organic Farming.</i> Guide learners to discuss the factors that determine a particular farming method. Example: • Land availability and soil type • Climate pattern • The type of tools available (e.g. cutlass, hoe, tractors, etc) • Source of water for irrigation • Availability of labor • Availability of extension officers to provide technical support.		Pictures and Charts

	Guide learners to discuss the shifting cultivation method of farming and its characteristics. <u>Shifting cultivation.</u> <i>This is a system of farming in which the farmer cultivates a piece of land for some time, the land when it loses its fertility together with his settlement. The farmer may come back to cultivate the old land later.</i>  <pre> graph LR Plot1[Plot 1] --> Plot2[Plot 2] Plot2 --> Plot3[Plot 3] </pre> Learners assess the advantages and disadvantages of shifting cultivation. <u>Advantages of Shifting cultivation</u> 1. Land previously used is allowed to fallow so as regain its fertility. 2. Farmer spends little or nothing in improving the soil fertility. 3. The farmer could grow crops on any new land he moves to. <u>Disadvantages of Shifting cultivation</u> 1. Due to increasing population and resultant pressure on land, this system is difficult to practice. 2. The would always have to move or relocate his household. 3. This type of farming system is expensive because of the constant clearing of new land. Again, learners discuss the land rotation method of farming and its characteristics. <u>Land rotation.</u> <i>This is a system of farming in which a farmer cultivates a piece of land for some time and leaves it to clear a new land when the old land becomes less fertile. The farmer moves to the new land without moving his settlement.</i>  <pre> graph TD Plot1[Plot 1] --> Plot2[Plot 2] Plot2 --> Plot3[Plot 3] Plot3 --> Plot1 </pre> <u>Assessment</u> 1. What is a farming system? 2. State four factors that determines a particular farming method. 3. Describe briefly any two farming methods and state two advantages and two disadvantages of it.	
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Date: 17 th JUNE, 2022		DAY:		Subject: Science																								
Duration:				Strand: Systems																								
Class: B7		Class Size:		Sub Strand: Farming Systems																								
Content Standard: B7.3.4.1 Demonstrate an understanding of the differences among the various farming systems: Land Rotation, Crop Rotation, Mixed Cropping, Mixed Farming, and Organic Farming			Indicator: B7.3.4.1.2 Categorize different farming systems		Lesson: 2 of 2																							
Performance Indicator: Learners can categorize different farming systems				Core Competencies: CC 9.6: CC 8.1: CC 8.4: DL 5.5: DL 5.6: CP 5.1:																								
References: Science Curriculum Pg. 23-24																												
Phase/Duration		Learners Activities			Resources																							
PHASE 1: STARTER		Using questions and answers, review learners understanding in the previous lesson. Share learning indicators and introduce the lesson.																										
PHASE 2: NEW LEARNING		Revise with learners on the shifting cultivation and land rotation methods of faming. Guide learners to identify and define other types of farming systems in Ghana and elsewhere. <i>Crop rotation is the practice of growing a series of dissimilar or different types of crops in the same area in sequenced seasons.</i> <table><tr><th colspan="4">Three-year crop rotational programme</th></tr><tr><th rowspan="2">Year</th><th colspan="3">Plot</th></tr><tr><th>1</th><th>2</th><th>3</th></tr><tr><td>1</td><td>Yam</td><td>Cowpea</td><td>Maize</td></tr><tr><td>2</td><td>Maize</td><td>Yam</td><td>Cowpea</td></tr><tr><td>3</td><td>Cowpea</td><td>Maize</td><td>Yam</td></tr></table> Engage learners to discuss the principles of crop rotation. Example: 1. Deep rooted crops are followed by shallow rooted crops 2. Crops that belong to the same family should not follow each other, etc. <u>Advantages of crop rotation</u> 1. There is reduction of total crop failure 2. Soil fertility is maintained because of the inclusion of leguminous plants 3. Crop rotation controls soil erosion. <u>Disadvantages of crop rotation</u> 1. Special skill is required in carrying out this type of farming system. 2. Cultural practices are difficult to carry out on the same piece of land because different crops are involved Engage learners to differentiate between land rotation and crop rotation.			Three-year crop rotational programme				Year	Plot			1	2	3	1	Yam	Cowpea	Maize	2	Maize	Yam	Cowpea	3	Cowpea	Maize	Yam	Pictures and Charts
Three-year crop rotational programme																												
Year	Plot																											
	1	2	3																									
1	Yam	Cowpea	Maize																									
2	Maize	Yam	Cowpea																									
3	Cowpea	Maize	Yam																									

Differences between Land rotation and Crop rotation.

Land rotation	Crop rotation
1.Crops are grown in a random manner	1.Crops are grown in a definite order or cycle.
2.Crops are cultivated on different pieces of land.	2. crops are cultivated on the same piece of land.

Learners to discuss the characteristics of the mixed farming and mixed cropping methods of farming in Ghana.

Mixed cropping, also known as inter-cropping or co-cultivation, is a type of farming that involves planting two or more of plants(crops) simultaneously in the same field.

Advantages of mixed cropping

1. Different crops may be harvested at different times. This helps the farmer to get food over a long period.
2. Since different crops are grown, pests and diseases may not spread easily.
3. Where cover crops or legumes are grown, they soil fertility.

Disadvantages of mixed cropping.

1. The crops may compete for nutrients, water, light and space for survival.
2. Different fertilizers may be needed in some cases, for different crops. This could increase the cost of production.
3. Mechanization is difficult. 4. Improper spacing may lead to shading of other crops.

Mixed farming

Mixed farming is the cultivation of crops along with rearing of animals for meat or milk on the same farm.

Advantages of mixed farming.

1. The is regular supply of food for the farmer and his family.
2. The fertility of the soil is improved by the use of farm yard manure.
3. There is no need for the farmer to shift to a new piece of land since there is less likelihood of low soil fertility.

Disadvantages of mixed farming.

1. The farmer may have divided attention for keeping both crops and animals.
2. It requires a lot of skills in managing crops and animals.
3. Animals usually destroy crops when they are not well confined.

Have learners compare and contrast the characteristics of mixed farming and mixed cropping methods of farming.

Difference between mixed cropping and mixed farming.

Mixed cropping	Mixed farming
Two or more different crops are grown the same piece of land.	Crops and animals are raised on the same piece of land.

Assessment

1. You are given the following crops; cassava, sorghum, garden eggs, and soya beans. Use the principles of crop rotation to draw-up a four year rotation plan.

PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	
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SECOND TERM WEEKLY LESSON NOTES

WEEK 7

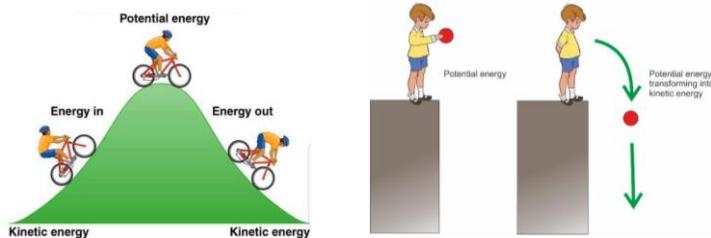
Date: 24 th JUNE, 2022		DAY:	Subject: Science
Duration:			Strand: Systems
Class: B7	Class Size:		Sub Strand: Farming Systems
Content Standard: B7.3.4.1 Demonstrate an understanding of the differences among the various farming systems: Land Rotation, Crop Rotation, Mixed Cropping, Mixed Farming, and Organic Farming		Indicator: B7.3.4.1.3 Discuss the usefulness of different farming systems	Lesson: 2 of 2
Performance Indicator: Learners can categorize different farming systems			Core Competencies: CC 9.6: CC 8.1: CC 8.4: DL 5.5: DL 5.6: CP 5.1:
References: Science Curriculum Pg. 24-25			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Using questions and answers, review learners understanding in the previous lesson. Share learning indicators and introduce the lesson.		
PHASE 2: NEW LEARNING	Guide learners to discuss the other types of farming systems in Ghana. Example: <u>Pastoral farming</u> It is a farming system in which the farmer keeps farm animals like cattle and sheep, and moves them from place to place in search of food and water especially during the dry season. <u>Advantages of Pastoral Farming</u> • <i>The farmer does not spend much in terms of feeding the animals.</i> • <i>The farmer does not spend money in housing the animals.</i> <u>Disadvantages of Pastoral farming</u> • <i>The farmer loses animals to predators like lions, tigers, etc.</i> • <i>The animals are easily attacked by diseases and parasites.</i> • <i>The animals are easily stolen by thieves.</i> <u>Monoculture</u> This is a type of farming system in which the same type of crop is repeatedly grown on the same piece of land season after season. <u>Advantages</u> • <i>The farmer is able to specialize in the cultivation of his crops.</i> • <i>It is easy to identify and deal with diseases and pests of crops</i> <u>Disadvantages</u> • <i>Crops are easily attacked by pests.</i> • <i>Diseases spread easily when they infect crops.</i>		Pictures and Charts

	Have learners discuss the difference between monoculture and monocropping. Let learners discuss the advantages and disadvantages of intensive and extensive system of farming. Organize visits to farms where the various farming systems are practiced. In groups, have learners make observations and write a report on each type of farming system they visit.	
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Date: 24 th JUNE, 2022		DAY:	Subject: Science
Duration:			Strand: Systems
Class: B7	Class Size:		Sub Strand: Farming Systems
Content Standard: B7.3.4.1 Demonstrate an understanding of the differences among the various farming systems: Land Rotation, Crop Rotation, Mixed Cropping, Mixed Farming, and Organic Farming		Indicator: B7.3.4.1.3 Discuss the usefulness of different farming systems	Lesson: 2 of 2
Performance Indicator: Learners can discuss the importance of farming systems			Core Competencies: CC 9.6: CC 8.1: CC 8.4: DL 5.5: DL 5.6: CP 5.1:
References: Science Curriculum Pg. 24-25			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Using questions and answers, review learners understanding in the previous lesson. Share learning indicators and introduce the lesson.		
PHASE 2: NEW LEARNING	Learners classify different descriptions of farming systems under Crop Rotation, Mixed Cropping, Mixed Farming and Organic Farming. Guide learners to group farming systems prevailing in their community under Crop Rotation, Mixed Cropping, Mixed Farming and Organic Farming Learners discuss and tabulate the reasons behind the use of various farming systems. Engage learners to debate the merits and demerits of the different farming systems. Guide learners to discuss the importance of farming systems Example: 1. Farming system serves as a source of lively-hood. 2. It provides employment opportunities. 3. It contributes to the development of the economy. 4. It provides industries with raw materials to the such cocoa, rubber, cotton, tobacco, etc.		Pictures and Charts
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		

SECOND TERM WEEKLY LESSON NOTES

WEEK 8

Date: 1 st JULY, 2022		DAY:	Subject: Science
Duration:			Strand: Forces & Energy
Class: B7	Class Size:		Sub Strand: Energy
Content Standard: B7.4.1.1 Demonstrate an understanding of forms of energy and their daily applications		Indicator: B7.4.1.1.1 Identify the various forms of energy and show how they are related.	Lesson: 1 of 2
Performance Indicator: Learners can categorize different farming systems			Core Competencies: DL 5.3: DL 5.1:CC 8.2: CC 8.5: CI 5.2: CI 6.2:CI 5.4:
References: Science Curriculum Pg. 26-27			
Phase/Duration	Learners Activities	Resources	
PHASE 1: STARTER	Using questions and answers, review learners understanding in the previous lesson. Share learning indicators and introduce the lesson.		
PHASE 2: NEW LEARNING	Brainstorm learners for the meaning of energy. <i>Energy is the ability or the capacity to do work. It is measured in joules (J).</i> <i>The following are some forms of energy:</i> <i>i. Mechanical energy (potential and kinetic energy)</i> <i>ii. Chemical energy</i> <i>iii. Light energy</i> <i>iv. Sound energy</i> <i>v. Nuclear energy</i> <i>vi. Electrical energy</i> <i>vii. Heat energy</i> <i>viii. Thermal energy</i> <i>ix. Solar energy</i> Engage learners to demonstrate and show by diagrams how Potential Energy (PE) is related to Kinetic Energy (KE) ; (Mechanical Energy= PE+ KE).  <i>Mechanical Energy: It is the energy that a body has due to its position or its states of motion. There are two forms of mechanical energy: These are potential and kinetic energy. Mechanical energy = kinetic energy (KE.) + potential energy (PE.).</i> <i>Potential and kinetic energy are two forms of energy that can be converted into each other. Potential energy can be converted to kinetic energy and vice versa.</i>	Solar panels, Torch light, cardboards, candle, etc	

	Potential energy is the stored energy in any object or system by virtue of its position or arrangement of parts. However, it isn't affected by the environment outside of the object or system, such as air or height. On the other hand, kinetic energy is the energy of an object or a system's particles in motion. Contrary to potential energy, the kinetic energy of an object is relative to other stationary and moving objects present in its immediate environment. For instance, the kinetic energy of the object will be higher if the object is placed at a greater height. Potential energy isn't transferrable and it depends on the height or distance and mass of the object. Kinetic energy can be transferred from one moving object to another (vibration and rotation) and is dependent on an object's speed or velocity and mass. Let's explain P.E and K.E with the help of an example. Imagine you have a hammer in your hand. When you raise the hammer higher, it'll have potential energy. But as you drop the hammer downwards to bang on a table's surface, it'll have kinetic energy. There are three interesting things you should note here. First, the raised hammer has more potential energy since it has the potential to go higher or lower. Second, when you hit the hammer on the table, the stored potential energy is converted to kinetic energy as the hammer is falling. (It's the falling hammer that has kinetic energy.) Third, as soon as the hammer hits the table, the energy changes. The stationary hammer then has stored energy in the form of potential energy. As this example demonstrates, energy is neither destroyed nor lost during the whole process – it's only altered from one form to another, proving the law of conservation of energy. When the book is at rest, it has potential energy. But when you accidentally knock it off the table, this potential energy will turn into kinetic energy while the book falls since it's in motion. However, as soon as the book hits the floor, this energy of motion will again convert to potential energy. Guide learners to discuss the difference between potential and kinetic energy. <u>Assessment</u> 1. What is energy? 2. How is potential energy related to kinetic energy. 3. State three difference between potential energy and kinetic energy.	
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Date: 24 th JUNE, 2022		DAY:	Subject: Science
Duration:			Strand: Forces & Energy
Class: B7	Class Size:		Sub Strand: Energy
Content Standard: B7.4.1.1 Demonstrate an understanding of forms of energy and their daily applications		Indicator: B7.4.1.1.2 Explain daily applications of forms of energy.	Lesson: 2 of 2
Performance Indicator: Learners can categorize different farming systems		Core Competencies: DL 5.3: DL 5.1:CC 8.2: CC 8.5: CI 5.2: CI 6.2:CI 5.4:	
References: Science Curriculum Pg. 26-27			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Using questions and answers, review learners understanding in the previous lesson. Share learning indicators and introduce the lesson.		
PHASE 2: NEW LEARNING	Discuss how forms of energy are used in daily life. Example: <i>Chemical energy: Chemical energy is energy stored in the bonds of chemical compounds (atoms and molecules). Chemical energy is released in a chemical reaction, often in the form of heat.</i> <i>Electrical Energy: Electrical energy is the energy carried by moving electrons in an electric conductor. Other forms of energy are also converted to electrical energy.</i> <i>Thermal energy: Thermal energy is the energy a substance or system has related to its temperature, that is, the energy of moving or vibrating molecules</i> Guide learners to match forms of energy to appliances (gadgets) used daily at school, in the home and community. Explain factors that affect Potential and Kinetic energy in their application in daily life. <u>Factors that affect Potential energy</u> 1. Objects of larger masses have greater potential energy than objects of smaller masses 2. The higher the acceleration due to gravity, the greater the potential energy and vice versa. 3. The higher the height of an object, the greater the potential energy and vice versa <u>Factors that affect kinetic energy:</u> 1.The greater the mass of an object the greater the kinetic energy and vice versa. 2.The higher the velocity of the object, the greater the kinetic energy and vice versa Use mathematical expressions for both Potential energy (PE = mgh) and Kinetic energy (KE = ½ mv ²) and use the expressions to solve problems involving mechanical energy.		Solar panels, Torch light, cardboards, candle, etc

	<i>Potential energy: Potential energy (PE) is calculated by using the formula mass (m) x acceleration due to gravity(g) x height (h) of the object.</i> <i>Kinetic energy: Kinetic energy is the energy that a body has by virtue of its motion. It is calculated by using the formula, (K.E) = $\frac{1}{2} \times mv^2$.</i> 1. A body of mass 14.0 kg is placed on an orange tree 17.0m above the ground. Calculate its potential energy with respect to the ground. [g = 10m/s²]. Answers: Given that; mass of the of object, (m) = 14kg, height (h) of the tree = 17m acceleration due to gravity, g = 10m/s² Potential energy ((P.E) = m x g x h = 14kg x 10m/s² x 17m = 2380J 2.The potential energy of a body 5 m above the ground is 200 J. Calculate the mass of the body if g = 10 m/s². ANSWER: Potential energy (P.E) = 200J height (h) = 5m g= 10m/s² mass(m) =? Mass(m) = P.E / g x h = 200/ 10 x 5 = 200/ 50 = 4kg The mass of the body = 4kg. 3.The body of mass 5 kg has a potential energy of 400 J. Calculate the height of the body above the ground if g = 10 m/s² Answers: Mass(m)= 5Kg, Potential energy ((P.E) = 400J, g=10m/s² height (h) =? height (h) = P. E / m x g h = 400J / 5 x 10 h = 400/ 50 h = 8m The height of the body above the ground is 8m. <u>Assessment</u> 1.Three objects X, Y and Z with masses 30 kg, 55 kg and 27 kg respectively are placed on top of a building of height 35 m from the ground. State with reasons, which of the objects: • Has the least potential energy? • Has the greatest potential energy? • Will have the greatest kinetic energy when rolled to fall?	
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

SECOND TERM WEEKLY LESSON NOTES

WEEK 9

Date: 8 th JULY, 2022		DAY:	Subject: Science
Duration:			Strand: Forces & Energy
Class: B7	Class Size:		Sub Strand: Energy
Content Standard: B7.4.1.2 Demonstrate an understanding of the concept of heat transfer and its applications in life		Indicator: B7.4.1.2.1 Explain and demonstrate how heat is transferred in various media	Lesson: 1 of 2
Performance Indicator: Learners can demonstrate how heat is transferred in various media			Core Competencies: DL 5.3: DL 5.1:CC 8.2: CC 8.5: CI 5.2: CI 6.2:CI 5.4:
References: Science Curriculum Pg. 28-29			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Using questions and answers, review learners understanding in the previous lesson. Share learning indicators and introduce the lesson.		
PHASE 2: NEW LEARNING	Guide learners to explain how heat is transferred through different media (gas, plastic, metal, liquid). <u>Transfer of heat energy</u> When an object is heated, it becomes hot. The heat in it can be transferred from one place to another. This process is known as heat transfer. Heat transfer is the method by which heat energy moves through different media. There are three modes of heat transfer: 1. Conduction: Conduction is the transfer of heat energy through solids. 2. Convection: Convection is the transfer of heat energy through fluids (liquids and gases). 3. Radiation: Radiation is the transfer of heat energy through empty space(vacuum) Engage learners to carry out an activity to show how heat is transferred through different media. Have learners identify the materials needed for the experiment: Example: <i>metal objects (iron rod), retort stand, drawing pins, shea butter or candle wax, ruler, and Bunsen burner</i> Demonstrate the procedure to show how heat is transferred through different media 1. <i>Clamp the metal rod horizontally as shown in the diagram below.</i> 2. <i>Use melted candle wax or shear butter to attach the drawing pins at equal intervals on the rod.</i> 3. <i>Leave the wax or shear butter to cool.</i> 4. <i>Heat the other end of the rod with the Bunsen burner</i>		Solar panels, Torch light, cardboards, candle, etc

5. Observe and record the time taken for each of the drawing pins to fall off the rod.



Observation: It was observed that after sometime, the drawing pins begins to fall off from the rod. The pins closest to the heat source fell off first, because the heat reached the wax holding it first before the second and the third pin. This happens because the heated molecules gain energy and vibrate vigorously. They pass on the vibrations to molecules near them which result in the spread of heat through the solid. The particles of the solid do not move from one place to another.

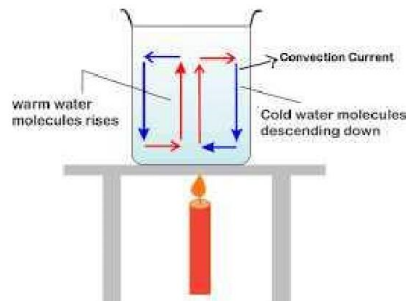
Conclusion: The fall off of the drawing pins shows that conduction has taken place as heat is being transferred from a region of high temperature to a region of lower temperature

Engage learners to experiment to demonstrate Convection In a Liquid.

Materials needed: Beaker, Water, tripod stand and Bunsen burner

Procedure:

1. Half-fill the beaker with water
2. Place the beaker on the tripod stand
3. Heat the beaker at the base and closely observe the movement of the convection current in the beaker.



Observation: From the figure above you can clearly see convection current. When the water was heated the molecules nearest to the source gain energy and move faster leading to fluid expansion. The heated molecules become lighter and moves upwards. As heated molecules of the water move upwards, the denser and colder molecules begin to move downwards. This means that the warm water rises and the colder molecules of water descend.

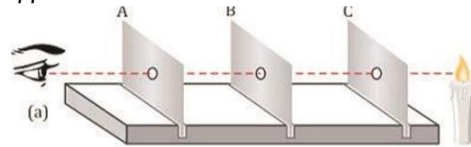
Conclusion: The upward and downward movements of the convection current shows that convection has taken place.

Guide learners to discuss how heat energy is transferred through a vacuum (empty space).

	<i>In radiation, heat is transmitted in a form of wave. It does not require any material medium. For example, if you bring your hand near a lighted candle, you feel the heat from the candle. The heat is not transferred to your hand by conduction, because air is a good insulator and does not conduct heat. The heat didn't reach the hands by convection, because convection occurs in fluids.</i> <u>Assessment</u> I. With the aid of diagrams, state and explain the three modes of heat transfer.	
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

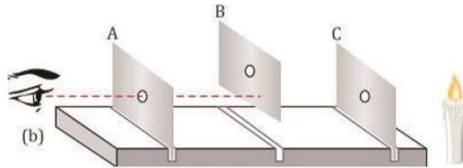
Date: 8 th JULY, 2022		DAY:	Subject: Science
Duration:			Strand: Forces & Energy
Class: B7	Class Size:		Sub Strand: Energy
Content Standard: B7.4.1.3 Demonstrate understanding of characteristics of light, such as travelling in a straight line, reflection, refraction and dispersion		Indicator: B7.4.1.3.1 Demonstrate how light travels in a straight line.	Lesson: 2 of 2
Performance Indicator: Learners can demonstrate how light travels in a straight line			Core Competencies: DL 5.3: DL 5.1:CC 8.2: CC 8.5: CI 5.2: CI 6.2:CI 5.4:
References: Science Curriculum Pg. 28-29			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Using questions and answers, review learners understanding in the previous lesson. Share learning indicators and introduce the lesson.		
PHASE 2: NEW LEARNING	Revise with learners on light energy and its types. <i>Light Energy is a form of energy that makes vision possible.</i> <u>Types of light Energy</u> 1. Visible light: This light can only be seen through the naked eye. It is a form of electromagnetic energy. The source of visible light is the sun. It can also emit from lanterns, flashlight, light bulbs, etc. 2. Infrared light: This is a form of electromagnetic energy that produce heat. TV remotes use infrared light. They travel from the remote to the TV. 3. X ray and Ultraviolet light: They are short light waves used by doctors to capture images within our bodies and spot fractures in our bones. Also, dentist use x-ray to monitor the extent of the deterioration of the teeth. Guide learners to discuss the properties of light. i. Light travels in a straight line. ii. Light can be reflected from shiny surfaces. iii. Light traveling in straight line can bend as it moves through different media (refraction). iv. Light can be dispersed into different colors (dispersion). Engage learners to perform experiments to show that light travels in a straight line and can be reflected and refracted and produce reports, posters or diagrams. Procedure: 1. Arrange the three card boards A, B, and C with a hole in their centers in a straight line by passing a string: 2. Through the holes, as in diagram (a) below. 3. Remove the string.		Triangular prism, an arrow beam of light, a screen, cardboard, candle

4. Place the source of light behind the first cardboard. Observe what happens



In the diagram (a) above, the observer can see the candlelight through the holes made on the cardboards A, B and C.

6. Displace the cardboard B slightly so that the card boards are no longer in a straight line as in diagram (b) below.



When cardboard B is shifted, the observer can no longer see the candlelight as before.

Using diagrams, guide learners to explain what refraction of light is.

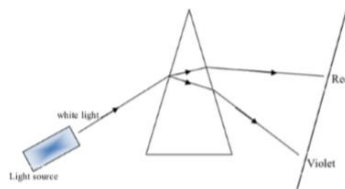
Engage learners to perform an experiment to show dispersion of light into colors.

Dispersion Of Light Dispersion is the separation of white light into its components colors when it passes through a medium (glass or water).

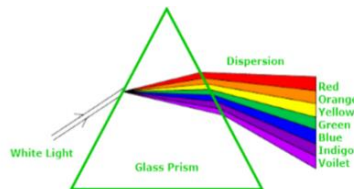
Materials needed: Triangular prism, an arrow beam of light, a screen

Procedure:

1. Set up the experiment as shown in the diagram below.
2. Switch on your light source
3. Regulate the position of the light source until a clear and sharp image of the components of light is seen on the screen.



White light is simply the light from the sun, stars, torchlight, and electric lamps. White light is made up of seven colours namely; red, orange, yellow, green, blue, indigo, and violet (ROYGBIV). These different colours forming white light can be seen in a rainbow or when a white light passes through a prism (a triangular block of glass or plastic).



NOTE:

	• When the white colors pass through a prism, it is refracted or bent as it leaves the prism. • Each color of the spectrum of the white light is refracted at different amount due to the speed at which each color travels in a media (air, water and glass) • The color that refract most is violet and the color that refracts least is red <u>Assessment</u> 1. Describe a simple experiment to demonstrate that light travels in a straight line. 2. Draw a labelled diagram to show dispersion of light through a triangular glass prism and explain what accounts for the position of the different colors. 3. Explain the difference between reflection, refraction, and dispersion. 4. Use a ray diagram to show the path of light travelling from air into water.	
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

SECOND TERM WEEKLY LESSON NOTES

WEEK 10

Date: 15 th JULY, 2022	DAY:	Subject: Science
Duration:		Strand: Forces & Energy
Class: B7	Class Size:	Sub Strand: Electricity & Electronics
Content Standard: B7.4.2.1 Demonstrate understanding of forms of electricity, its generation and effects on the environment.	Indicator: B7.4.2.1.1 Describe the various forms of electricity generation.	Lesson: 1 of 2
Performance Indicator: Learners can demonstrate how heat is transferred in various media		Core Competencies: DL 5.3: DL 5.1:CC 8.2: CC 8.5: CI 5.2: CI 6.2:CI 5.4:
References: Science Curriculum Pg. 29-31		
Phase/Duration	Learners Activities	Resources
PHASE 1: STARTER	Using questions and answers, review learners understanding in the previous lesson. Share learning indicators and introduce the lesson.	
PHASE 2: NEW LEARNING	Guide learners to search for and discuss information about the nature and generation of thermal and nuclear electricity. Electricity generation is the process of converting some form of energy into electrical energy. Thermal and nuclear energy can be used to produce electricity. <u>Thermal Energy:</u> Thermal energy is a form of energy that is associated with heat. All objects are made up of tiny particles called molecules. In cold things, like ice cubes, the molecules move very slowly. In hot things, like a hot drink, the molecules move very fast. The faster the molecules are moving inside an object, the hotter the object will be. Therefore, hot objects are objects which have high thermal energy. <u>How Thermal Energy is Generated</u> Thermal Energy is a key source of electricity. Thermal energy can be produced from fossil fuels such as crude oil and gas. In Ghana the Aboadze Thermal Plant uses crude oil and gas to generate electricity. <u>Nuclear Energy:</u> Nuclear energy is the type of energy which is produced from atoms of various elements through chemical reactions. Scientists have learnt to capture energy from the atoms of some elements which can be used to generate electricity. <u>How Nuclear Energy is Generated</u> When an atom is split a huge amount of energy is released. This energy is used to generate electricity for industries and homes. This takes place at nuclear power plants. At the nuclear power plant, the heat from the nuclear reaction is used to create steam from water which in turns powers electrical generators.	Charts, pictures and videos

	Have learners produce reports, posters, diagrams and charts about your findings.	
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Date: 15 th JULY, 2022		DAY:	Subject: Science
Duration:			Strand: Forces & Energy
Class: B7	Class Size:		Sub Strand: Electricity & Electronics
Content Standard: B7.4.2.1 Demonstrate understanding of forms of electricity, its generation and effects on the environment.		Indicator: B7.4.2.1.2 Explain the impact of electricity generation on the environment.	Lesson: 2 of 2
Performance Indicator: Learners can describe the impact of electricity generation on the environment.			Core Competencies: DL 5.3: DL 5.1:CC 8.2: CC 8.5: CI 5.2: CI 6.2:CI 5.4:
References: Science Curriculum Pg. 29-31			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Using questions and answers, review learners understanding in the previous lesson. Share learning indicators and introduce the lesson.		
PHASE 2: NEW LEARNING	Engage learners to debate the negative effects of both thermal and nuclear electricity generation on the environment and how to reduce the effects. Almost all part of the electricity system affects the environment and the size of these impact will depend on how and where the electricity is generated. In general, the environmental effect includes: 1. Emission of greenhouse gases and other pollutants, especially when a fuel is burnt. 2. Discharge of pollutants into water bodies, including thermal pollution, which makes water hotter than the original temperature of the water body. 3. Generation of solid waste, which may include hazardous waste. 4. Lands used for fuel production, power generation, and transmission and distribution lines. 5. Effects on plants, animals and ecosystem that result from the air, water, waste and land. Have learners create posters leaflets of the outcome of the debate. <u>Assessment</u> 1. Briefly distinguish between nuclear and thermal energy. 2. Write any two applications of thermal energy. 3. Describe how nuclear energy is generated in your own words		Charts, pictures and videos
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		

SECOND TERM WEEKLY LESSON NOTES

WEEK 11

Date: 22 nd JULY, 2022		DAY:	Subject: Science
Duration:			Strand: Forces & Energy
Class: B7	Class Size:		Sub Strand: Electricity & Electronics
Content Standard: B7.4.2.2 Demonstrate knowledge of how to assemble and explain the functions of basic electronic components and their interdependence in an electronic circuit		Indicator: B7.4.2.2.1 Demonstrate how to assemble basic electronic components in an electronic circuit..	Lesson: 1 of 2
Performance Indicator: Learners can demonstrate how to assemble basic electronic components in an electronic circuit.			Core Competencies: DL 5.3: CI 6.8:
References: Science Curriculum Pg. 31-32			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Using questions and answers, review learners understanding in the previous lesson.		
	Share learning indicators and introduce the lesson.		
PHASE 2: NEW LEARNING	Brainstorm learners for meaning of Electronic circuit. <i>An electronic circuit is the path through which electrical current flows.</i> Guide learners to identify components that make up electronic circuits. Example: capacitor, Diode, LED, Resistor, IC, Relay, Inductor, etc. Paste a chart of electronic components for learners to identify the names of the pictures and relate to them.  Guide learners to discuss the three main basic component of an electrical circuit. • Voltage source – The voltage source, such as a battery, is needed in order to cause the current to flow through the circuit.		battery, transistor, capacitor, inductors, light emitting diode (LED) and diodes

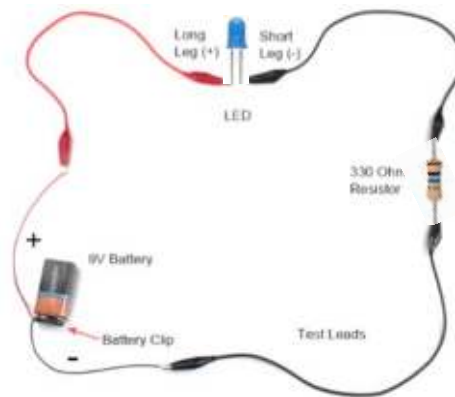
- Conductive path – a conductive path that provides a route for the electricity to flow.
- Load - a proper circuit needs a load that consumes the power.

Engage learners to demonstrate how to assemble components to test LED.

Components Needed: 9V Battery, Battery Snap-on Connector, Test Leads w/ Alligator Clips, 330 Ohm Resistor, LED – Basic Red 5mm

Steps:

1. Attach the battery clip to the top of the 9V battery.
2. Red wire from the battery clip is connected to one alligator clip on the red test lead.
3. The other end of the red test lead is connected to the long leg (+) of the LED.
4. Connect one alligator clip from black test lead to the short leg (-) of the LED.
5. The other end of the black test lead is clipped to one leg of the 330 Ω resistor.
6. Clip one side of the other black test lead to the other leg of the 330 Ω resistor.
7. The opposite end of the black test lead is connected to the black battery wire.



Assessment

Engage learners in different demonstrations to assembly electronic circuits components to produce light.

**PHASE 3:
REFLECTION**

Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson.

Take feedback from learners and summarize the lesson.

Date: 22 nd JULY, 2022		DAY:	Subject: Science
Duration:			Strand: Forces & Energy
Class: B7	Class Size:		Sub Strand: Electricity & Electronics
Content Standard: B7.4.2.2 Demonstrate knowledge of how to assemble and explain the functions of basic electronic components and their interdependence in an electronic circuit		Indicator: B7.4.2.2.2 Discuss the function of each electronic component and their interdependence with each other.	Lesson: 2 of 2
Performance Indicator: Learners can describe the function of each electronic component.			Core Competencies: DL 5.3: CI 6.8: CI 6.6:
References: Science Curriculum Pg. 31-32			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Using questions and answers, review learners understanding in the previous lesson. Share learning indicators and introduce the lesson.		
PHASE 2: NEW LEARNING	Guide learners to discuss the function of each electronic component and their interdependence with each other Example: Switch: Switches can come in many forms such as pushbutton, rocker, momentary and others. The switch it is used to either open or close a circuit. A close circuit provides a complete path for the flow of electric current. When a circuit is opened, a break is created so that current does not flow through the circuit. Resistor: Resistors are used to regulate the flow of current of circuit. The amount of resistance that a resistor offers is measured in Ohms. Most resistors have coloured stripes on the outside and this code will tell you it's value of resistance Variable Resistor (Potentiometer): A variable resistor is also known as a potentiometer. These components can be found in devices such as a light dimmer or volume control for a radio. When you turn the shaft of a potentiometer the resistance changes in the circuit. Light-Dependent Resistor (LDR): A light-dependent resistor is also a variable resistor but is controlled by the light versus turning a knob. The resistance in the circuit changes with the intensity of the light. These are often found in exterior lights that automatically turn on at dusk and off at dawn. Capacitor: Capacitors store electricity and then discharges it back into the circuit when there is a drop in voltage. A capacitor is like a rechargeable battery and can be charged and then discharged. The value is measured in F (Farad), nano Farad (nF) or pico Farad (pF) range.		battery, transistor, capacitor, inductors, light emitting diode (LED) and diodes

	Diode: A diode allows electricity to flow in one direction and blocks it from flowing the opposite way. The diode's primary role is to route electricity from taking an unwanted path within the circuit. Light-Emitting Diode (LED): A light-emitting diode is like a standard diode in the fact that electrical current only flows in one direction. The main difference is an LED will emit light when electricity flows through it. Inside an LED there is an anode and cathode. Current always flows from the anode (+) to the cathode (–) and never in the opposite direction. The longer leg of the LED is the positive (anode) side. Transistor: Transistor are tiny switches that turn a current on or off when triggered by an electric signal. In addition to being a switch, it can also be used to amplify electronic signals. A transistor is similar to a relay except with no moving parts. Guide learners to dismantle and assemble spoilt electronic gadgets such as radio, TV, mobile phones, electronic watches and others that can be found in the home and at school and name the parts. Have learners identify the Positive (P) region and Negative (N) region of the P-N junction diode and construct a simple electronic circuit comprising a 3V battery made of two dry cells in series with a switch and an LED. Learners to explain what happens when the switch in an electronic circuit is closed and when it is opened. <u>Assessment</u> 1. Identify five electric circuit component and state their functions. 2. construct a simple electronic circuit comprising a 3V battery made of two dry cells in series with a switch and an LED	
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

SECOND TERM WEEKLY LESSON NOTES

REVISION

WEEK 12

Date: 29 th JULY, 2022		DAY:	Subject: Science
Duration:			Strand: Forces & Energy
Class: B7	Class Size:		Sub Strand: Electricity & Electronics
Content Standard: B7.4.2.2 Demonstrate knowledge of how to assemble and explain the functions of basic electronic components and their interdependence in an electronic circuit		Indicator: B7.4.2.2.3 Discuss the function of each electronic component such as resistor, diode, and inductor, and their interdependence for the functioning of an electronic gadget	Lesson: 1 of 2
Performance Indicator: Learners can describe the function of each electronic component.			Core Competencies: DL 5.3: CI 6.8: CI 6.6:
References: Science Curriculum Pg. 31-32			
Phase/Duration	Learners Activities		Resources
PHASE 1: STARTER	Using questions and answers, review learners understanding in the previous lesson. Share learning indicators and introduce the lesson.		
PHASE 2: NEW LEARNING	Guide learners to discuss the roles and the significance of the following electronic components in a circuit and how they affect each other. Example: Resistor: Resistors are used to regulate the flow of current of circuit. The amount of resistance that a resistor offers is measured in Ohms. Most resistors have coloured stripes on the outside and this code will tell you it's value of resistance Diode: A diode allows electricity to flow in one direction and blocks it from flowing the opposite way. The diode's primary role is to route electricity from taking an unwanted path within the circuit. Light-Emitting Diode (LED): A light-emitting diode is like a standard diode in the fact that electrical current only flows in one direction. The main difference is an LED will emit light when electricity flows through it. Inside an LED there is an anode and cathode. Current always flows from the anode (+) to the cathode () and never in the opposite direction. The longer leg of the LED is the positive (anode) side. Transistor: Transistor are tiny switches that turn a current on or off when triggered by an electric signal. In addition to being a switch, it can also be used to amplify electronic signals. A transistor is similar to a relay except with no moving parts.		battery, transistor, capacitor, inductors, light emitting diode (LED) and diodes

	Explain changes in brightness in a LED in relation to addition of resistors, diodes, and inductors in an electronic circuit. <u>Assessment</u> 1. Identify five electric circuit component and state their functions. 2. construct a simple electronic circuit comprising a 3V battery made of two dry cells in series with a switch and an LED	
PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	