Moaz Medhat Magdy
4A

MINISTRY OF EDUCATION AND TECHNICAL EDUCATION
وزارة التربية والتعليم والتعليم الفني

Science

4

Performances and Assessments

Primary Four

Second Term
2025-2026

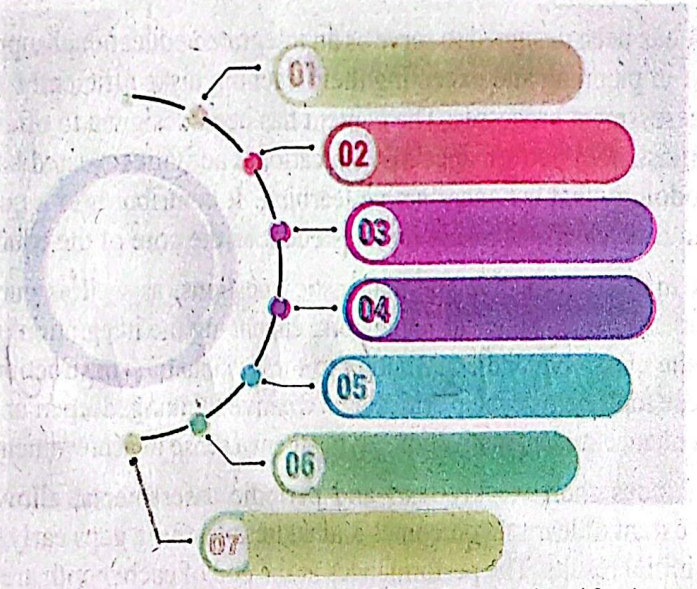
Concept 3.1 : Devices and Energy
Start - lesson One & Two

Week (1)
Date: / /

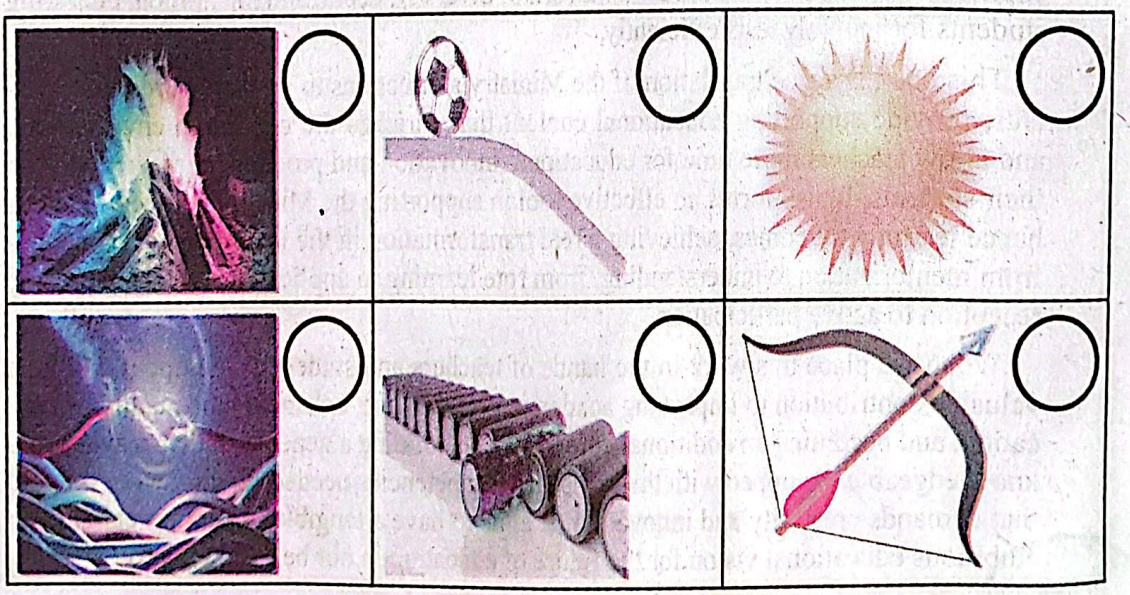
Classroom Performance:

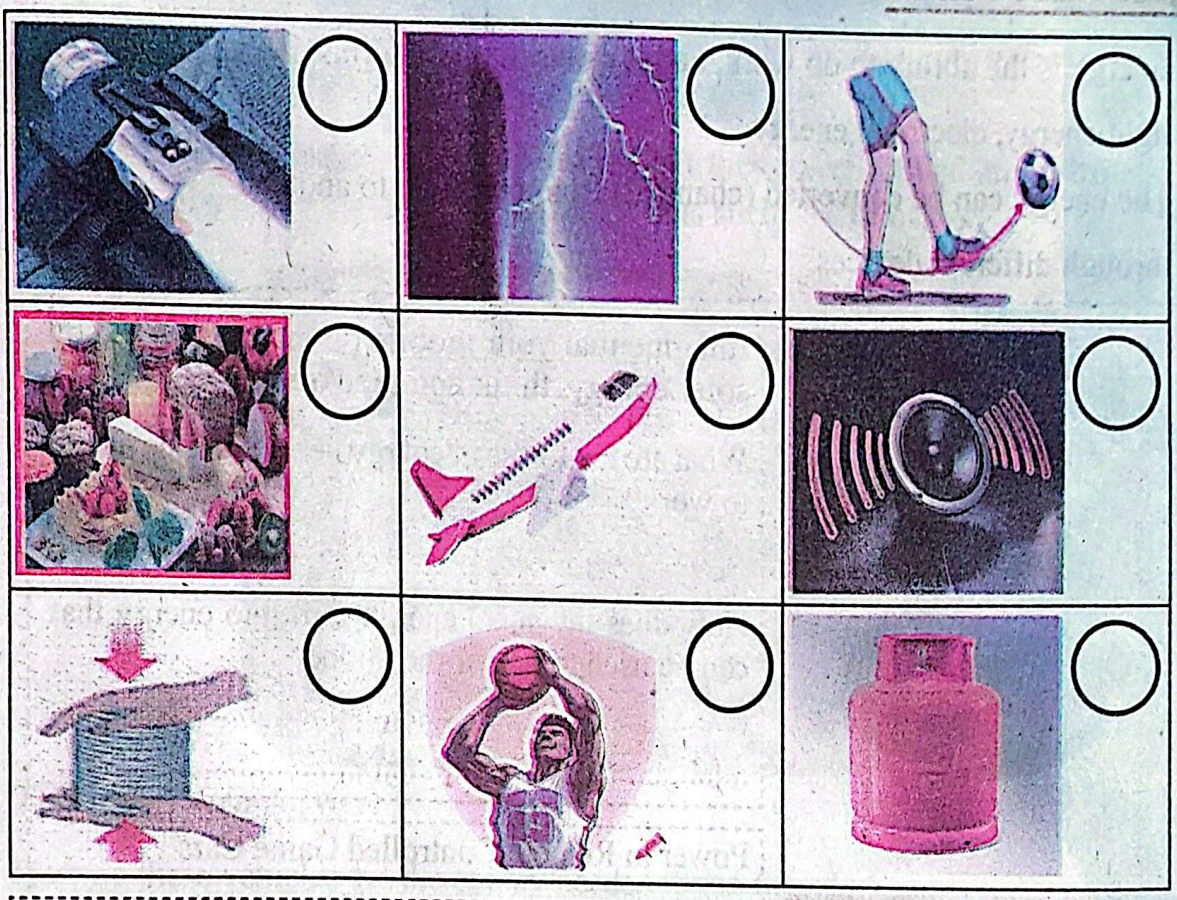
Energy is the source of life

Every body in which life or movement is alive emits energy, and every stationary body stores energy. There are several forms of energy that you have studied, including:



Notice the following pictures, and in light of the above, classify them according to the type of energy they represent by writing the suitable number for each type of energy

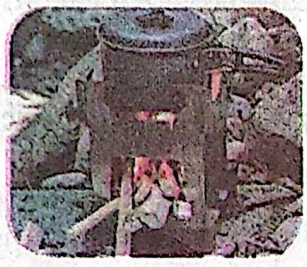




Scientific Facts Studied:

Fuel is a source of energy, such as wood, gasoline, and natural gas

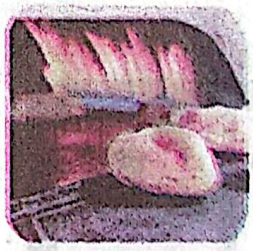
Note the energy produced from the fuel in the following images, and then complete:



Fuel: Wood

Output energy: .....

Usage: .....



Fuel: Petroleum

Output energy: .....

Usage: .....

Energy is the ability to do work, and it exists in many forms, including: light energy, electrical energy.

The energy can be converted (changed) from one form to another through different devices.

Imagine that your mobile phone is powered by solar energy, think and then answer:

What are the forms of energy needed for the phone to work?

.....

How does the sun's energy turn into energy that can be used to power the phone?

.....

.....

Kid control by a remote-controlled car remotely

Power in Remote Controlled Game Cars

A lot of games can be played and controlled remotely, but they need energy to keep them moving and functioning.

What happens if?

There was no energy source in the toy car?

.....

.....

Think about the devices you use every day, such as an alarm clock, TV, blender, or light bulb.

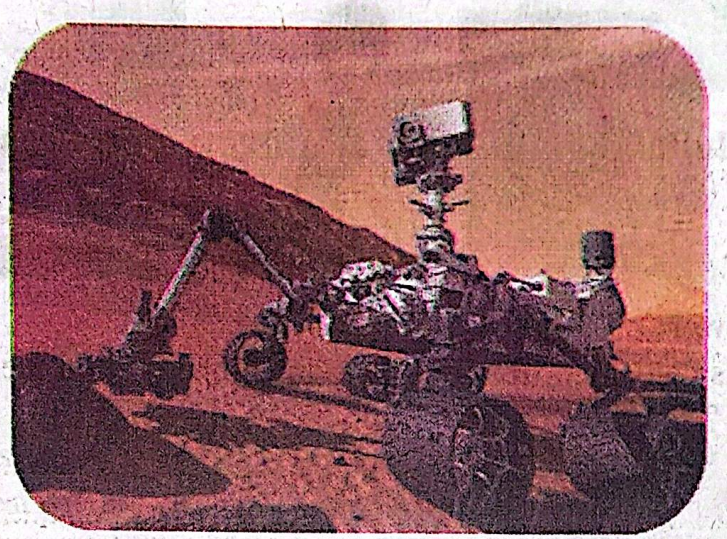
What kind of energy does each device need to function?

.....

.....

Mars rover Curiosity

Humans have sent many missions to Mars, but they have not had any astronauts, but rather have used spacecraft and robots such as Curiosity.



Think and then answer:

How do these vehicles get the energy needed to run them?

.....

.....

Do these vehicles depend on batteries only? Or also use solar energy?

.....

.....

Why do you need long-lasting batteries?

.....

.....

What is the difference between using solar energy on Earth and using it in space?

.....

.....

In our daily lives,

we use many devices such as vacuum cleaners, light bulbs, washing machines, and fans, all of these devices need energy to work, but have you ever wondered how this energy is converted inside the device?

Think then answer:

- The energy is converted from one form to another within these devices . Explain that ?

.....

.....

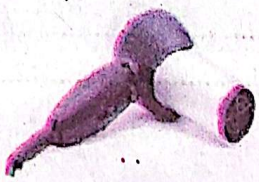
- What is the difference between input energy and output energy?

.....

.....

Note the following device pictures:

What is the input energy in each device and what is the output energy?



Hair Dryer

Energy In .....

Energy out .....

Detergent bottle

Energy In .....

Energy out .....

Washing machine

Energy In .....

Energy Out .....

Light bulb

Energy In .....

Energy Out .....

In front of you is a picture of a mobile phone, which is one of the most used devices in our daily lives. This phone doesn't work on its own, it needs energy to perform its various functions.

Think and answer :

What is the energy transformation inside this device?

.....

.....

What is the form of energy that enters and exits it?

.....

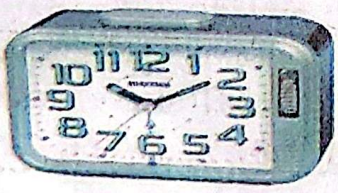
.....

Is all the energy produced useful? Or is there wasted energy?

.....

.....

In our daily lives, we use many battery-powered devices, such as a mobile phone, a toy car, or an alarm clock.



These devices only work if the chemical energy stored in the battery is converted into electrical energy, but have you ever wondered what would happen if these transformations didn't happen?

Will the device work?

.....

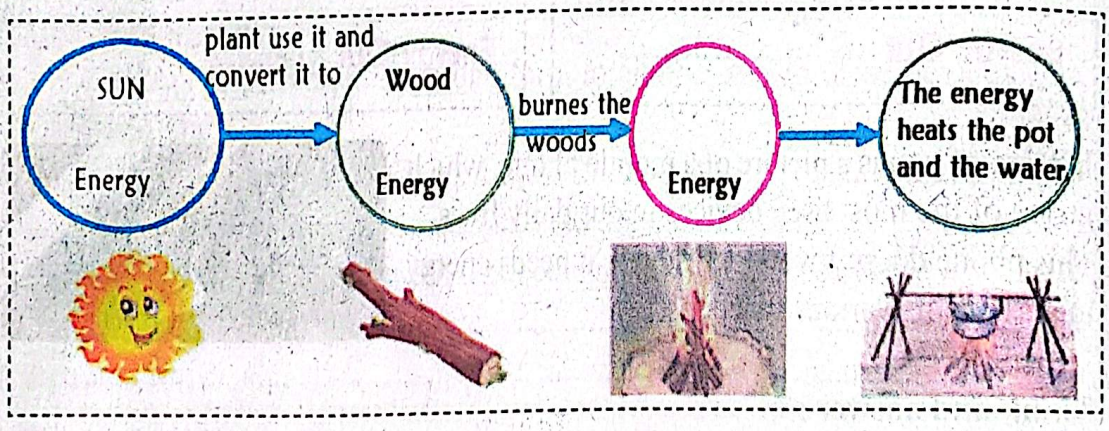
.....

Explain your answer

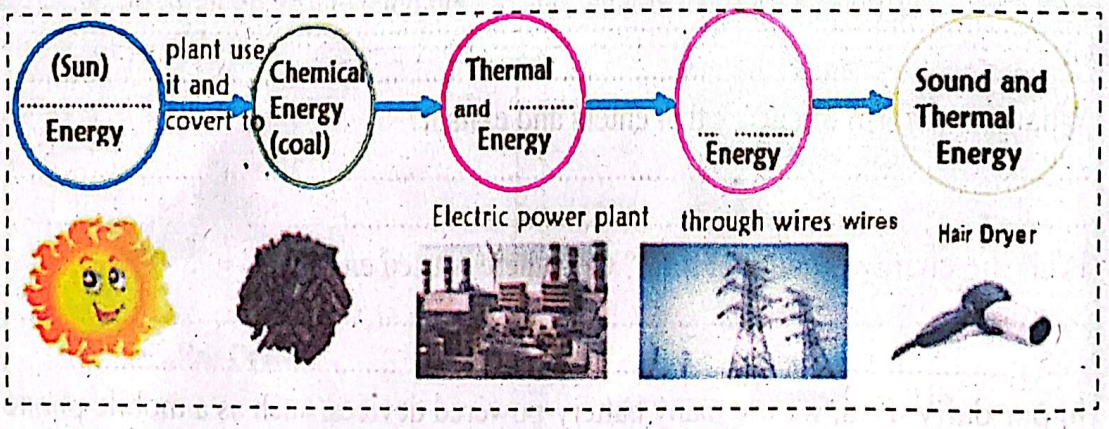
.....

.....

Track the energy form transformations as follows until the pot is heated. Complete the following energy paths:



Trace the forms of the energy that helped to operate the hair dryer in the following figure:



Draw or write a series of energy form that occur in your body in the process of getting energy through eating food.

Homework (Performance):

*** Complete the following statements:**

1- The energy produced by the hair dryer is the..... energy and..... energy.

2-The energy produced by the electric washing machine is the..... energy and..... energy

3- The plant converts .....energy to chemical energy.

4- When wood is burned, ... energy is produced.

5- Electricity generation in energy stations can be done by burning ..... or .....

Read the following statements and then correct the incorrect one:

1- The distance between Mars and Earth is about 54 million kilometers .

2- Energy can be converted from one form to another .

3- The toy cart needs an energy source.

4- The energy stored in the detergent bottle is the potential energy.

5- The energy produced by Sun is light energy only .

6-Explain the function of the Curiosity cart .

Weekly assessment :

Test 1

Complete the following statement:

In the light bulb, the .....energy is converted to the .....energy.

Write down what the following statement refers :

The main source of energy on Earth's surface.

Give reason: There is a change in energy when wood is burned .

What happens when: You turn on the hair dryer?

During running, energy transformation occur, explain the energy chain that occurs?

Test 2

Complete the following statement:

In a plant, ...energy is transformed to .....energy

Write down what the following statement refers:

A path that shows the flow of energy from the source to the tool used.

Give reason: The body stores energy within it.

What happens when: Coal burns.

Explain the energy chain that occurs in the hair dryer?

Test 3

Complete the following statement:

During running, ...energy is converted into..... energy.

Write down what the following statement refers:

The energy stored inside the tree.

Give reason:

Sun is the main source of energy on the earth's surface.

What happens when:

The electric heater is turned on?

Explain the energy chain in the electric washing machine?

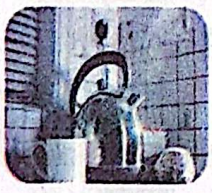
Concept 3.1 : Devices and Energy **Week (2)**

lesson Three and Four **Date: / /**

Classroom Performance:

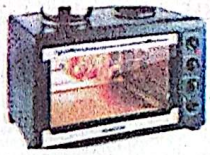
Energy and devices we use in our daily lives:

Every device we use in our daily lives needs energy to do its job, this energy is called energy consumption (input), and it enters the device and after the device is turned on, it produces other energy (output), which is what we see, hear, or feel. Consider the following devices to see the function of each device, forms of the energy consumed (inputs) and the energy output (outputs):



Water Kettle

Function: Water Heating
Forms of input Energy: Electrical energy
Forms of Output Energy: Thermal Energy



Electric Oven

Function: .....
Forms of input Energy: .....
Forms of Output Energy: .....

Is all the energy produced useful? Or is there energy that is lost (wasted)?

.....

.....

Energy Conservation:

In our daily lives, we use energy for almost everything: from turning on a lamp, to riding a bike, and even breathing and moving.

But have you ever thought: Where does this energy go?
Are they disappearing?

Think and then answer:

1- Can energy disappear completely? why?

.....

2- Can we create new energy from nothing?

.....

3- Can we destroy energy completely?

.....

What is the meaning of " Energy cannot be created nor destroyed."?

.....

Build an Energy Chain

Most of the energy we use comes from the sun. This energy undergoes a series of transformations, converting from one form to another within devices, such as a light bulb or a phone. Energy is neither created nor destroyed, but rather transforms from one form to another; a portion of it may be useful, while the rest is wasted and does not contribute to the device's operation.

1-What is the primary source of energy in our lives?

.....

2-Think about an activity like exercise, what energy chain occurs in your body?

.....

.....

Using the student book and in view of what you have studied, write the following :

Energy	
Energy Conservation	
Energy Transform Pathways	

Homework (Performance):

Complete the following statements:

1- A toy car that moves with a spring in which..... energy is converted to ..... energy

2- During running, ... energy is converted to .....energy.

3- In the radio, ... energy is converted to .....energy.

4- The input in the hair dryer is ..... energy.

5- When eating breakfast, the body stores .....energy from the food.

Read the following statements and then correct the incorrect one:

1- Energy is not destroyed or created.

2- The energy produced by the hair dryer is only thermal energy.

3- In an electric iron, the electrical energy is converted into heat energy.

4- The mobile stores electrical energy in the battery.

5- In an electric bell, the electrical energy is converted into sound energy.

What do we mean by the term energy conservation?

What is meant by chain of Energy Form?

Weekly assessment :

Test 1

Complete the following statement: The output in an electric fan is..... energy

Write down what the following statement refers: The main source of energy on Earth's surface.

Give reason: When you push the pedals of the bicycle with your feet, it produces heat energy .

What happens when you put your hands near some light bulbs.

Explain the energy path from input to output in the electric heater.

Test 2

Complete the following statement: The output in the hair dryer is .....energy and.....energy.

Write down what the following statement refers:

Energy is neither created nor destroyed.

Give reason: You feel hot when you bring your hands close to the light bulb.

What happens when you push the pedals of the bike with your feet.

Explain the energy path from inputs to outputs in television.

Test 3

Complete the following statement:

The output in the light bulb is the .....energy and..... energy

Write down what the following statement refers:

A path from input energy to output energy.

Give reason: Energy can be transformed from one form to another, but it never destroyed.

What happens when the electric iron is turned on.

Explain the power path from inputs to outputs in the radio.

Concept 2 : about fuel **Week (3)**

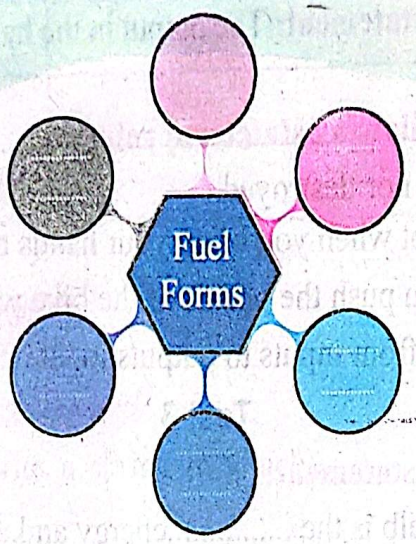
The first lesson and the beginning of the second lesson **Date: / /**

Classroom Performance:

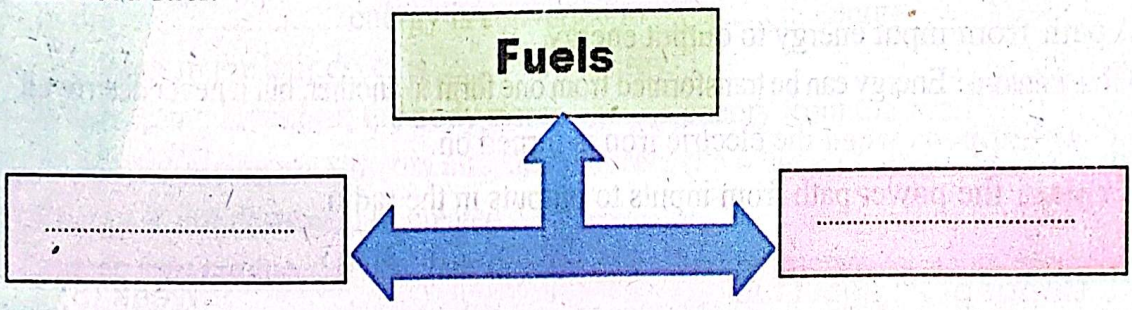
Fuel:

Any flammable substance that produces heat, look at the pictures in front of you and then select the source of the fuel in it .

Through the previous photos: Complete the following chart:



The used fuel:



Think and then answer:

What is the difference between wood and charcoal? Do they come from the same source?

.....

Choose a type of fuel, then mention one use of it in everyday life.

.....

What type of fuel do you think is best for the environment? And why?

.....

Why is charcoal a biofuel?

.....

What plants can be converted to a liquid fuel?

.....

How does sunlight help to create this fuel?

.....

.....

Can biofuels be good alternative to fossil fuels? Why?

.....

Renewable fuels such as

wood originally come from sunlight and are used daily in our lives.
But this type of fuel needs a long time to regenerate, so it's important very wisely its use.

Think and then answer:

What is meant by? renewable fuels? And why is wood considered from its type ?

.....

.....

.....

What do you think about relying on plants as an energy source ?

.....

.....

.....

Why should we guide the use of wood as an energy source?

.....

.....

.....

What are the risks that can occur if we cut down trees at a rapid rate?

.....

.....

.....

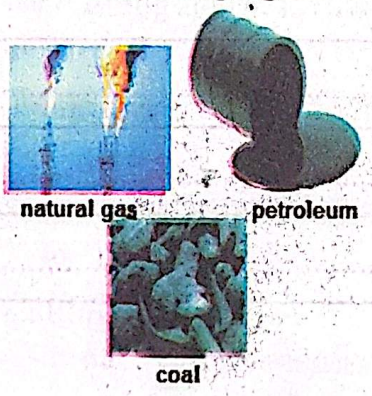
Can you suggest a way to protect forests?

.....

.....

.....

Note the following figure and then complete the spaces:



..... fuel

..... fuel

Complete the following table:

Comparison	Biofuels	Fossil fuels
Type (Renewable / Non-Renewable	.....	.....
Origin	.....	.....
Time required for forming	.....	.....
Environmental effect	.....	.....
Potential to run out	.....	.....
Consumption Rate	.....	.....
Examples	.....	.....

Think and then answer:

How can we reduce our dependence on non-renewable fuels?

.....

.....

.....

Can you suggest a new source of energy that doesn't harm the environment?

.....

.....

.....

Using the student book and in view of what you have studied, write down what the following indicates:

fuel	.....
Biofuels	.....
Fossil fuels	.....

Homework (Performance):

Complete the following statements:

1- Biofuels can be produced by ..... ,..... .
2- The primary and main source of fuels is ..... .
3- Examples of fossil fuels ..... and ..... .
4- ..... is from renewable fuels .
5- ..... and ..... are from non – renewable sources of energy.

Read the following statements and then correct the wrong one::

1- Cars and trucks don't need fuels to move.
2- The primary and main source of fuels is wind.
3- Fossil fuels are from renewable sources of energy.
4- Coals are biofuels .
5- Natural gas is used in cooking food .

*** Define the following :**

Fuels.....
Biofuels.....
Fossil fuels.....

Weekly assessment :

Test (1)

Answer the following questions :

1- Complete the following sentence:

By burning fuels ..... is released .

2- Write the scientific term :

Fuels that are made from living things .

3- Give reasons:

Fossil fuels are non- renewable sources of energy .

4- What happens when:

Cutting down trees .

5- Compare between biofuels and fossil fuels (examples of each of them)

Test (2)

Answer the following questions :

1- Complete the following sentence:

The remains of plants and animals turned into coal by ..... and ..... of Earth.

2- Write the scientific term :-.

A substance that when burned release thermal energy.

3- Give reasons:

Biofuels are renewable sources of energy.

4- What happens when:

Making deforestation.

5- Compare between biofuels and fossil fuels (definition)

Test (3)

Answer the following questions :

1- Complete the following sentence:

..... has a variety of negative impacts on environment.

2- Write the scientific term :

Fuels that were formed from remains of plants and animals .

3- Give reasons:

Sun is renewable source of energy .

4- What happens when:

Burning fuels .

5-Compare between biofuels and fossil fuels (the type of energy resources)

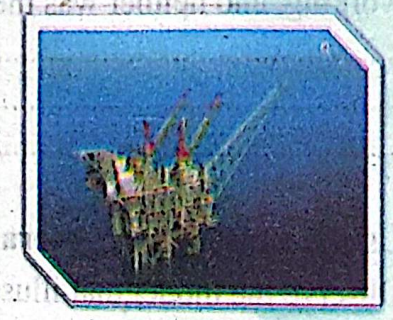
Concept 2 : about fuel Week (4)

The rest of lesson 2 and lesson 3 Date: / /

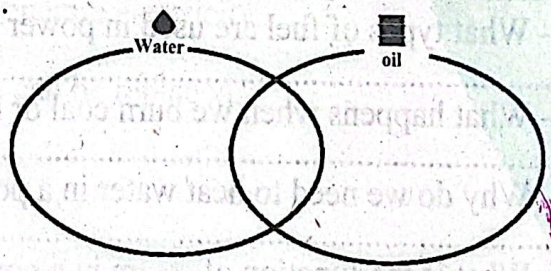
Classroom Performance:

Oil and water:

Oil is a non-renewable energy source because it is formed from ancient marine organisms and takes millions of years to be formed, while it is consumed quickly. Water, on the other hand, is a renewable resource that is naturally renewed through the water cycle in nature and can be used continuously without running out.

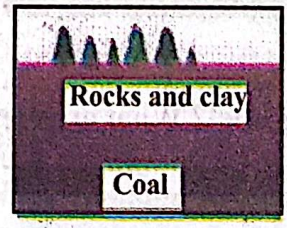


Guided by the previous paragraph, explain the similarities and differences between oil and water in the following figure:

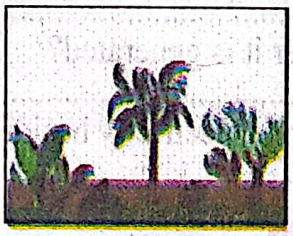


Think then answer:

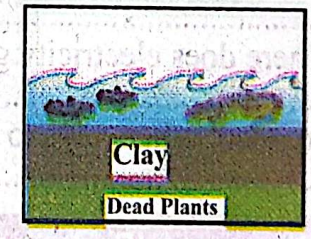
Reorder the steps of fossil fuel formation using the following pictures:



The remains are exposed to high heat and pressure deep underground and are transformed into fossil fuel.



Living organisms that lived millions of years ago die, and their bodies remain in the earth.



The remains of these organisms are buried under layers of sediment such as sand and clay.

Life without electricity

Write a short story entitled "A Day in My Life Without Electricity".

On Friday morning, I woke up to my mother's voice saying, "The electricity is out!" I looked around and found that the lightbulb wasn't working, and neither was the fan

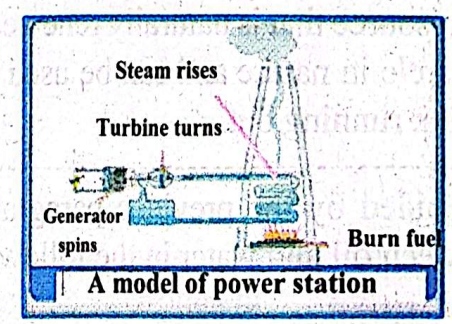
.....

.....

.....

Using fossil fuels to generate electricity:

Observe the model that illustrates how power plants work, then answer the following questions:



A model of power station

- What types of fuel are used in power plants?

.....

- What happens when we burn coal or natural gas?

.....

- Why do we need to heat water in a power plant?

.....

- What is the function of steam in a power plant?

.....

- What is the name of the device that rotates using steam?

.....

- Where does electricity go after it is generated?

.....

- Are there other ways to generate electricity beside burning fuel? What are they?

.....

Homework (Performance):

Complete the following statements:

1- Oil formed as a result of ……. ,……. .

2- Oil is a ……. resource of energy.

3- ……. transforms kinetic energy into electrical one.

4- Electricity is generated in a …… .

5- We must not …… and …… of water.

Read the following statements and then correct the wrong one:

1- Hydropower is non-renewable resource of energy.

2- A generator transforms electrical energy into kinetic energy .

3- Fossil fuels are important in generating electricity.

4- Coal is only fossil fuels.

5- Heat only affects on the remains of living things to convert them into fossil fuels.

Define the following :

Oil.....

Renewable resource of energy .....

non-renewable resource of energy.....

Weekly assessment :

Test (1)

Answer the following questions :

1- Complete the following sentence:

We can use ..... and ..... to generate electricity.

2- Write the scientific term :

Natural material that is used faster than it can be replaced.

3- Give reasons:

Water is from renewable resource of energy.

4- What happens when:

Decomposition of sea creatures under the Earth surface.

5- Show how the fossil fuels is formed (in brief) ?

Test (2)

Answer the following questions :

1- Complete the following sentence:

..... and ..... are from fossil fuels.

2- Write the scientific term:

Natural material that can be renewed soon after it is used.

3- Give reasons:

Oil is from non-renewable resource of energy.

4- What happens when:

We waste or pollute water.

5- Mention the non-renewable and renewable resources of energy which is used in generating electricity .

Test (3)

Answer the following questions :

1- Complete the following sentence:

A generator transforms ……energy into …….. energy .

2- Write the scientific term :

Material formed as a result of decomposition of sea creatures

3- Give reasons:

We should not waste or pollute water.

4- What happens when:

Living without electricity .

5- What can you do at home to conserve fuels and avoid wasting electricity?

Concept 2 : about fuel **Week (5)**

Lesson 4 and 5 **Date: / /**

Classroom Performance:

Environmental problems in large cities:

Think then answer:

- What causes air pollution in large cities?

……

- How does pollution affect human health?

……

- What are the differences between large cities and rural areas in terms of pollution?

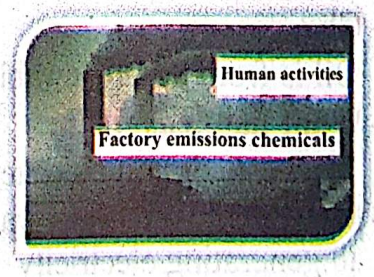
……

- How can we reduce pollution in our city?

……

Pollution and burning of fossil fuels:

For a long time, people have used energy to power factories, homes, and cars. To obtain this energy, fossil fuels are burned, causing pollution, acid rain, and global warming.
The solution is energy conservation to protect the environment and preserve non-renewable fuels.



Think then answer:

- What is acid rain? And how does it affect plants and animals?

.....

- What is global warming? And why should be worried about it?

.....

- What does energy conservation mean? Suggest ideas to encourage people to conserve energy.

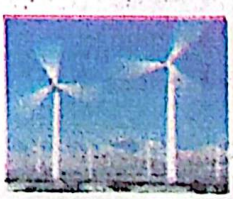
.....

- Are there other ways to obtain energy without pollution?

.....

- Draw an environmentally friendly means of transport

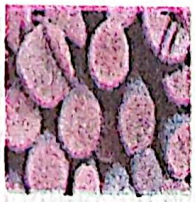
Think, then assign a number to each fuel type according to its suitability (renewable - non-renewable):



(1)

(2)

(3)



(4)

(5)

(6)

(7)

Renewable fuel	Non-renewable fuel

Homework (Performance):

Complete the following statements:

1- Carbon dioxide forms …….. with water .
2- Fuels can be classified into …….. and ……..
3- The solution to stop acidic rains and global warning is to ……..
4- Oil and coal is from …….. fuels .
5- Solar energy and wind are ……..energy resources.

Read the following statements and then correct the wrong one::

1- Fossil fuels are used in electric generation.
2- Water is from nonrenewable energy resources .
3- Nitrogen is the cause of global worming.
4- The renewable energy resources pollute the environment .
5- Oxygen gas is formed by burning of fossil fuels .

Define the following :

Acidic rains……
Global warning ……..
Air pollution ……...

Weekly assessment :

Test (1)

Answer the following questions :

1- Complete the following sentence:

Acidic rains cause the pollution of …….. , ……..

2- Write the scientific term :Rising the temperatures of Earth.

3- Give reasons:

Fossil fuels are one of the major causes of pollution.

4- What happens when:

Increase the amount of carbon dioxide in air.

5- Determine the causes of air pollution .

Test (2)

Answer the following questions :

1- Complete the following sentence:

From the renewable energy resources.....from the non-renewable resources..... .

2- Write the scientific term :

Rains that formed by combination of carbon dioxide with water vapor of air.

3- Give reasons:

Increase the amount of carbon dioxide is dangerous for the environment.

4- What happens when:

Increase the temperature of Earth.

5- Determine the damage of burning fossil fuels .

Test (3)

Answer the following questions :

1- Complete the following sentence:

Wind is from ..... energy resources while fossil fuels is from .....,. energy resources.

2- Write the scientific term :The increase of carbon dioxide in the air.

3- Give reasons:

Burring fossil fuels has many risks to the environment .

4- What happens when:

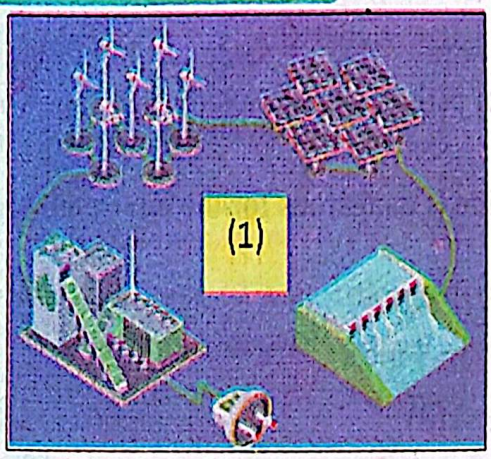
Increase of carbon dioxide in air and combines with water vapour.

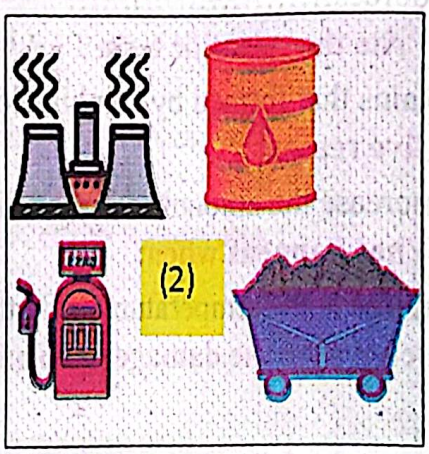
5- Determine the causes of global warning .

Concept 3 : Renewable energy resources **Week (5)**

Lesson 1 and 2 **Date: / /**

Classroom Performance:





Observe then compare between the previous pictures:

1- What does picture number (1) represent? What sources does it include?

It represents .....

It includes .....

2- What does picture number (2) represent?

It represents .....

It includes .....

3- Which of the previous sources are exhaustible and which are not?

.....

4- Which one pollutes the environment and which one is environmentally friendly?

.....

5- Which of them should be used more extensively? And why?

.....

The reason:

.....

Windmills and watermills:

In the past, before the invention of electricity, people needed machines to help them grind grain to make flour, so they invented windmills and watermills to make life easier.

Today, these mills have evolved and are used in the form of modern turbines to generate electricity, which differ greatly from the old mills in both form and function.

Compare between old windmills and modern turbines in terms of form and function

Comparison	Old windmills	Modern turbines
The shape	.....	.....
The function	.....	.....

Usage of solar energy:

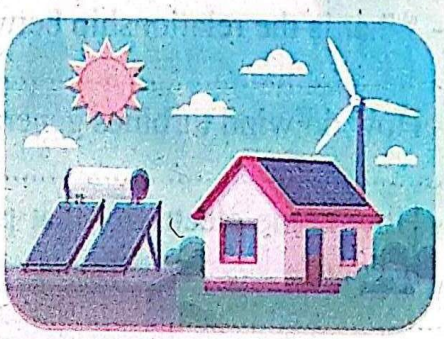
Think then answer:

- Mention two ways that humans use solar energy in daily life.

.....

.....

.....



- Write a short paragraph explaining why we should use solar energy more in the future.

.....

.....

.....

- What is the function of solar panels? And how do they work?

.....

.....

- What challenges might people face when using solar panels?

.....

.....

- Imagine you are a young engineer and you have designed a device that runs on solar energy. Draw this device, explain how it works, and what its function?

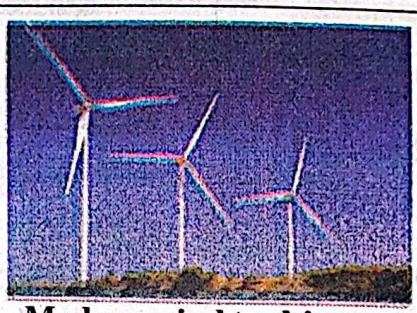
.....

.....

.....

Benefit from wind

Did you know that wind can be converted into electricity? When the sun heats the air, the wind starts to move, and we can use this movement to power wind turbines.



Modern wind turbines

Think then answer:

- What is the relationship between the sun's heat and air movement?

.....

- How do wind turbines generate electricity?

.....

- How is the electricity that produced by the turbines transported to where it is needed?

.....

- What are the benefits of using wind energy instead of fossil fuels?

.....

Using the textbook and in light of what you have studied, write what the following indicates:

Turbines	.....
Solar energy	.....

Homework (Performance):

Complete the following statements:

1- Some mills used …….. and other used…… .
2- Energy received from the sun is called ……...
3- Solar panels are used to……
4- The water can be heated by passing through …… colour tubes .
5- Sun is a ……energy resource.

Read the following statements and then correct the wrong one:

1- Wind is non-renewable resources of energy .
2- In greenhouse the radiant energy from sun convert to electric energy.
3- The output of solar panels system is electric energy.
4- The concave mirror is used in collecting and focusing sunlight . .
5- Kinetic energy can be used in electric generation .

Weekly assessment :

Test (1)

Answer the following questions :

1- Complete the following sentence:

The input of the solar panels system is ……energy .

2- Write the scientific term : The clean energy resource that can be used in electric generation.

3- Give reasons:

The concave mirror can be used in cooking.

4- What happens when:

Water passing through blacks tubes.

5- Determine the important of greenhouse .

Test (2)

Answer the following questions :

1- Complete the following sentence:

The output of the solar panels system is …… energy .

2- Write the scientific term :

The main energy resource that plants and animals need it to survive.

3- Give reasons:

The solar energy is clear energy resource .

4- What happens when:

The concave mirror used in cooking.

5- Determine the output and input in greenhouse .

Test (3)

Answer the following questions :

1- Complete the following sentence:

From the renewable energy resources ....., ...

2- Write the scientific term :

A type of mirror that can be used to get heat which can be used in cooking.

3- Give reasons:

Sun is very important to plants and animals.

4- What happens when:

The radiant energy enters the greenhouse.

5- Determine the output and input in solar panels system .

Monthly exercise (1)

Complete the following statements:

1- The battery placed inside the game is considered a .....

2- One of the most famous robots is the Mars rover which called .....

3- Robots need ..... to operate.

4- The ....., is a source of energy on Earth.

5- Your body stores ..... energy.

6- Energy reaches Earth in the form of ..... and .....

7- A plant converts ..... energy to ..... energy stored as sugars.

8- A hair dryer converts ..... energy to ..... energy.

9- An electric light bulb converts ..... energy to ..... energy.

10- There are many forms of energy, such as ....., ... and .....

11- The input energy in a hair dryer is .....

12- From examples of renewable fuel is .....

13- Fuel is a substance that produces ..... when burned.
14- From examples of biofuel is.....
15- The decomposition of plants and animals remains produces ..... fuel.
16- Fossil fuels are ..... energy sources.
17- Water is ..... energy sources.
18- Energy is generated by burning of .....
19- There is a high percentage of ..... in large cities
20- From examples of fossil fuel is .....
21- From examples of renewable energy source ....., ... and .....
22- The energy emitted from the sun is ..... and ..... energy.
23- Solar panels are made up of a number of ..... cells.
24- ..... can be used to generate electricity.

Write what the following statements refer to:

1- A Mars exploration vehicle.
2- The main source of energy on Earth's surface.
3- The source of energy for the human body.
4- Tracing energy from entry to exit.
5- Energy produced from burning wood.
6- The substance from which electrical wires are made.
7- Energy cannot be created or destroyed.
8- The energy supplied to electrical devices.
9- A substance that produces heat energy when burned.
10- Sources of energy, such as fossil fuels.
11- Energy sources, such as solar energy.
12- Conserving energy and preventing its waste.
13- Increasing smog levels in cities.
14- Energy generated from the sun.
15- A tool used to grind grain to make flour.

Give reason for each of the following:

1- The battery is important in a toy car.
2- A spacecraft takes a long time to reach Mars.

3- Human food contains energy.
4- The sun is the primary source of energy on Earth.
5- Energy cannot be created or destroyed.
6- Energy consumption must be rationalized.
7- Fossil fuels are a non-renewable energy source.
8- Life without electricity is very difficult.
9- Large cities face numerous problems.
10- Energy inputs differ from energy outputs
11- Energy sources are diverse.
12- Solar energy plays a role in generating power.
13- Wind power can be used to generate energy.
14- Windmills and watermills are used.
15- The sun is a constant source of energy.

Mention the following energy transformations:

1- Electric light bulb
2- Hair dryer
3- Batteries
4- Turbines
5- Windmills
6- Solar panels
7- The food we eat
8- Electric washing machine
9- Electric iron
10- Blender

Define the following:

1- The law of conservation of energy
2- Renewable energy sources
3- Non-renewable energy sources
4- Pollution
5- Energy transfer pathways.

Concept 3 : Renewable energy resources **Week (8)**

Lesson 3 and 4 . **Date: / /**

Classroom Performance:

Falling Water

Water flowing from high elevations can be used to generate electricity by building dams equipped with turbines.

Think and answer:

Why are turbines placed in dams?

.....

.....

.....

Write a short paragraph explaining why we should use more hydroelectric power in the future .

.....

.....

.....

Imagine that you are a young engineer and you have designed a device that works by water energy. Draw this device and explain how it works and how it benefits people?

.....

.....

.....

.....

.....

.....

.....

Homework (Performance):

Complete the following statements:

1- Wind can be used to …….

2- The gravitational potential energy of rivers water convert to ……. energy.

3- The ……. in the dam generate electricity.

4- Water from ……,…. is used in electricity generation .

5- Wind is a ……energy resource.

Read the following statements and then correct the wrong one::

1- Water is non-renewable resource of energy .

2- Water from the rivers above the dam stores kinetic energy .

3- The electricity can be send along wires to cities.

4- We can generate electricity by wind and water .

5- The electricity that generated by water is called hydroelectricity.

Weekly assessment :

Test (1)

Answer the following questions :

1- Complete the following sentence:

We can use …… , ……..in generating electricity.

2- Write the scientific term :

Energy stored uphill water rivers.

3- Give reasons:

Turbines and generators in dams have important role.

4- What happens when:

Rivers run downhill.

5- Determine the input and output energies in turbines and generators inside the dams .

Test (2)

Answer the following questions :

1- Complete the following sentence:

From the renewable resources of energy …… , ……..

2- Write the scientific term :

Energy that make turbines and generators in dams works.

3- Give reasons:

The renewable energy resources are very important .

4- What happens when:

Turbines and generators are stopped in dam.

5- Determine the input and output energies in windmills.

Test (3)

Answer the following questions :

1- Complete the following sentence:

..... and ..... found in in the dam generate electricity.

2- Write the scientific term :

Energy that produced due to the operations of turbines and generators in dams.

3- Give reasons:

Dams have important role in electricity generation .

4- What happens when:

Stop building of dams.

5- Determine the output and input energies in watermills .

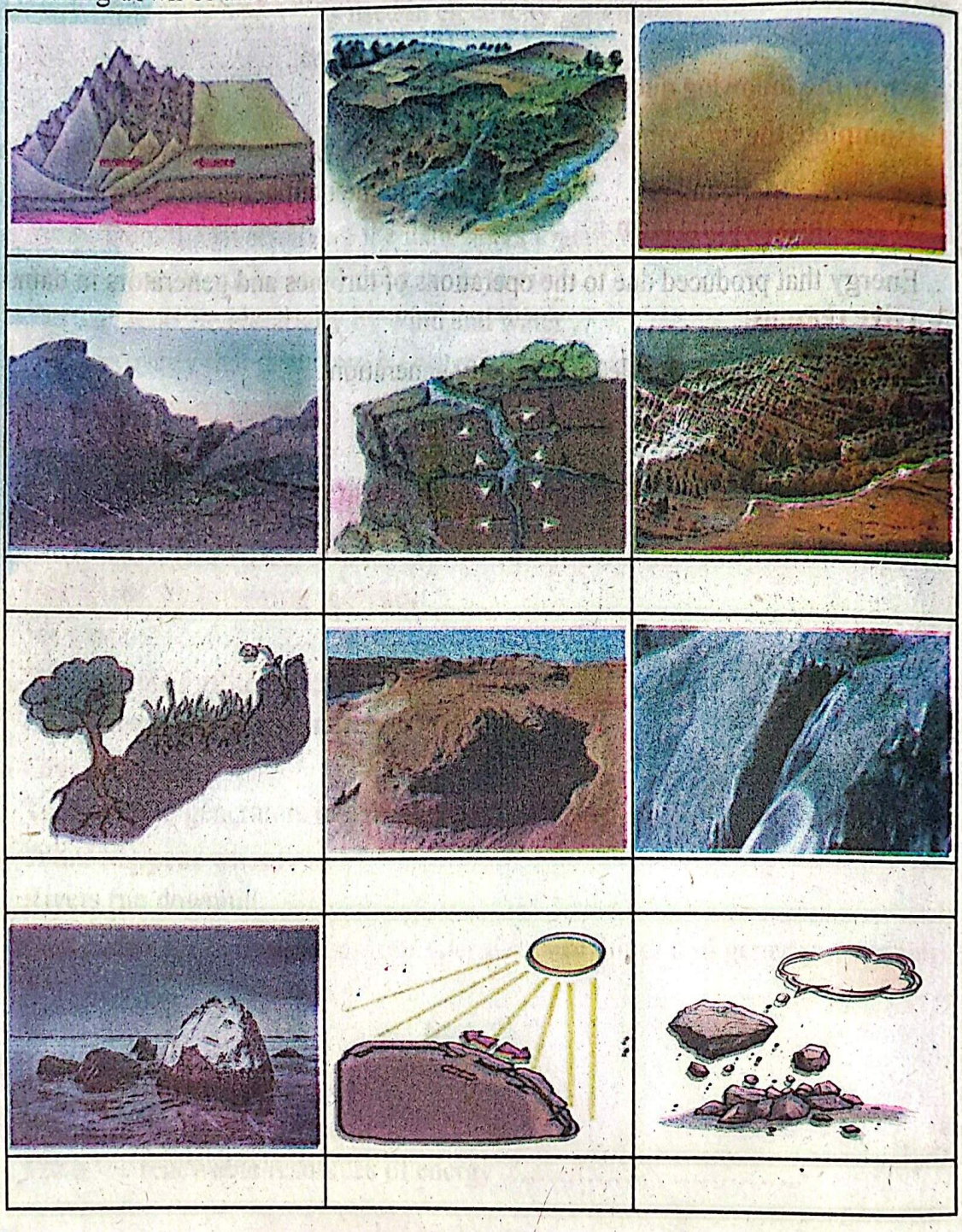
Concept One : Breaking Down and Moving Rocks

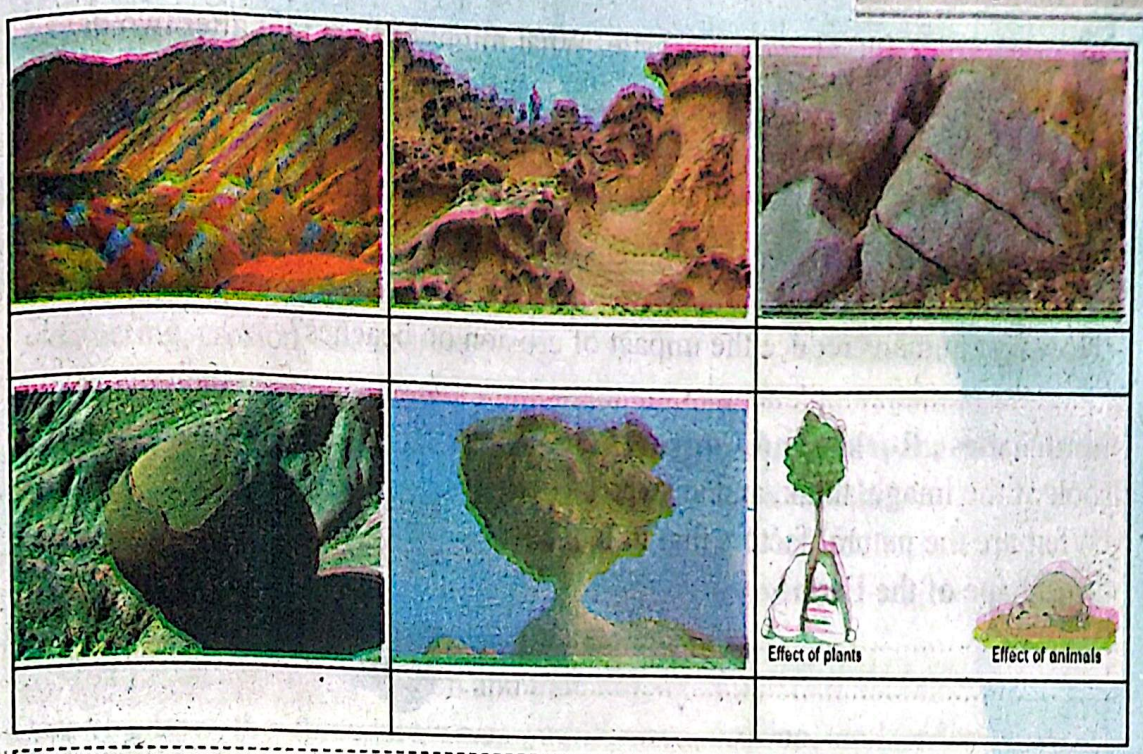
Week (9)

Lesson (1) and starting of lesson (2) Date: / /

Classroom Performance:

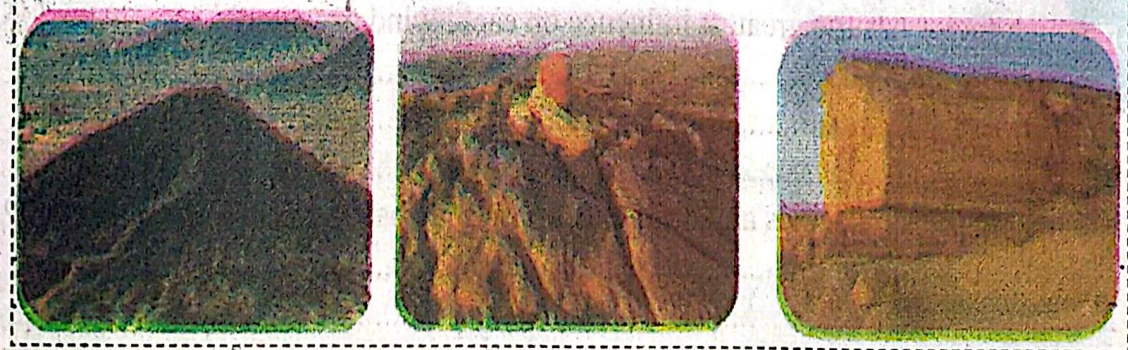
By observing the following images, identify below each image the reason for the breaking down of the rocks.





What I Already Know

The Earth's surface is constantly changing due to natural forces such as wind and water. Through the images in front of you, you will see how nature can reshape the Earth.



Think and then answer: How do these changes occur, and why are they important to our lives ?

.....

.....

Disappearing Sandcastles :

The Earth's surface is constantly changing due to natural factors such as wind and water.

A clear example of this is the disappearance of sandcastles from the beach shortly after they are built.

- Imagine you built a large sandcastle. What might happen to it after two days?

.....

.....

- Why don't footprints stay on the beach until the next day?

.....

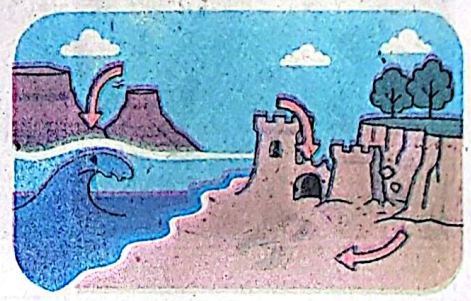
.....

- How can humans reduce the impact of erosion on beaches?

.....

Sandcastles , Rocks , and Canyo

Look at the image, think, and answer:



- What are the natural factors that influence the shape of the Earth?

.....

.....

.....

- Which is more rapid change: sandcastles or coastal rocks? Why?

.....

.....

.....

- Which factor has the greatest influence on each: wind or water?

.....

.....

.....

- What are the similarities and differences between coastal rocks and sandcastles?

.....

.....

.....

.....

Look at the image of the canyons; think about it, and then answer:

How are canyons formed? What are factors that contribute to their formation?

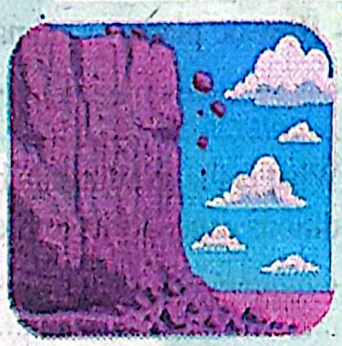
.....

.....

.....

.....

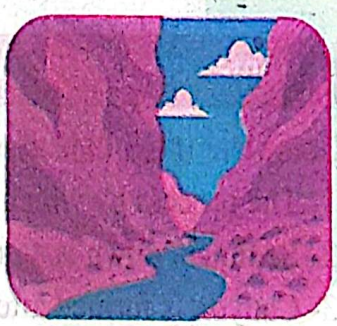
Shaping the Earth :



Have you ever noticed rocks breaking apart or soil moving from one place to another?
Have you seen a valley or a canyons in an image or in nature?
These things happen because of natural processes such as weathering, erosion, and sedimentation.

Complete the following sentences:

- The process of .... helps break up rocks, while the process of ..... moves rocks and sand from one place to another.
- When water carries soil from one place to another, it is called .....
- Sand dunes are formed as a result of sand deposition, which is called .....
- Look at the image of the canyon and then answer:
- Describe how the three processes (weathering, erosion, and sedimentation) helped to shape this landscape?

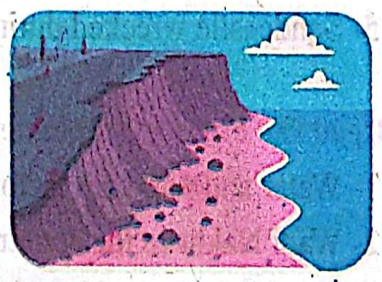


.....
.....
.....
.....
.....
.....

- What are factors that speed up or slow down these processes?

.....

What is Weathering?



Have you ever ask where small rocks or sand come from? Have you ever seen a large rock that is broken or cracked?
This is caused by weathering.

- Look at the image, then think with your partner and answer:
- Explain how wind or water can affect large rocks. Give an example from nature.

.....
.....
.....
.....

- How do plants or animals help weathering occur?

.....

.....

What is the relationship between weather and weathering? How can weather conditions cause rocks to break down?

.....

.....

.....

By the help of the textbook and in light of what you have learned,
Write the following:

Weathering	.....
Erosion	.....
Deposition	.....

Homework (Performance):

Complete the following statements:

1- The process by which rocks or soil moving is known as ..... .
2- Sediment down is a process of ..... .
3- Canyon is formed after ..... .
4- Some changes to Earth's surface happen take .....time and some take.....time .
5- Sandcastle wrecked during..... .

Read the following statements and then correct the wrong one:

1- Water and wind are factors that shape the surface of Earth .
2- Wadi Nakhr in the country of Oman .
3- Canyon is formed by wind.
4- Erosion and weathering change the shape of Earth's surface .
5- The process by which rocks are broken into smaller pieces is known as weathering .

Weekly assessment :

Test (1)

Answer the following questions :

1- Complete the following sentence:

Coastal rocks are formed by a …….. period of time.

2- Write the scientific term : The process by which sediment down.

3- Give reasons:

The waves cause beach erosion.

4- What happens when:

Rocks are broken into smaller pieces.

5- Determine the two factors that affect on the Earth's surface .

Test (2)

Answer the following questions :

1- Complete the following sentence:

……..moving soil from one place to another.

2- Write the scientific term : Moving fragments of rocks or soil around.

3- Give reasons:

Weathering and erosion change the shape of Earth's surface.

4- What happens when:

Waves crash the beach.

5- Determine the difference between weathering and erosion.

Test (3)

Answer the following questions :

1- Complete the following sentence:

…….. causing beach erosion.

2- Write the scientific term : Breaking apart rocks.

3- Give reasons:

Weather factors change Earth's surface.

4- What happens when:

Sediment settlting.

5- Show how Earth's surface change by the time .

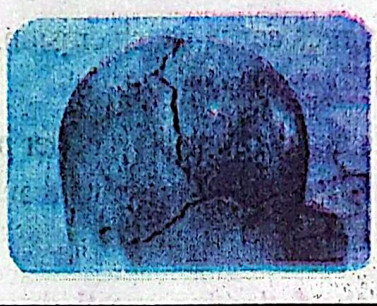
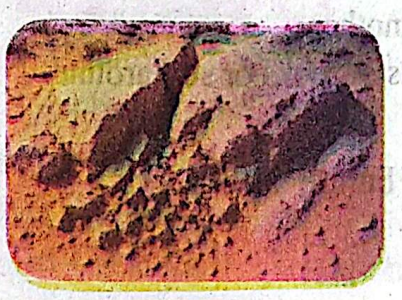
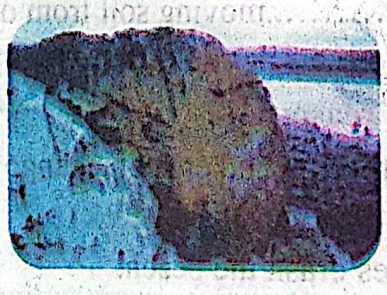
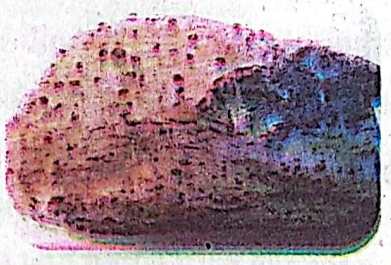
Concept One : Breaking Down and Moving Rocks **Week (10)**

The rest of lesson (2) and lesson (3) **Date:** / /

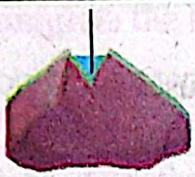
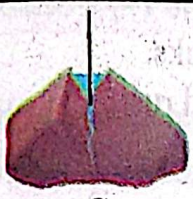
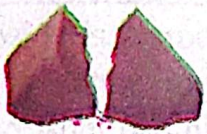
Classroom Performance:

Types of Weathering :

Look at the pictures and then identify the type of weathering (mechanical or chemical) in each rock:

	
..... Weathering	..... Weathering
	
..... Weathering	..... Weathering
	
..... Weathering	..... Weathering

- Look at the images and then complete the following sentences to explain the steps involved in the mechanical weathering of rocks:

 A	Water infiltrates and accumulates within ..... the fine-grained rocks.
 B	Water freezes when the temperature drops, then expand and causes ..... in cracks of rocks
 C	Ice melts and water fills ..... which are newly formed.
 D	The cycle of ..... and .....continues unitl rock breaks.

- Compare between mechanical weathering and chemical weathering in terms of their causes and effects on rocks:

Points of comparison	Mechanical weathering	Chemical weathering
Causes	....	....
Effects on rocks	....	....

Homework (Performance):

Complete the following statements:

1- Water freezes when the temperature drops, expands and causes ..... .

2- The cycle of .....and ..... until rock breaks.

3- Living organisms cause .....weathering .

4- The rust of rocks are caused by..... .

5- ..... and ..... cause the breaking of rocks .

Read the following statements and then correct the wrong one:

1- There is one type of weathering .

2- Most caves are formed due to chemical weathering .

3- The cycle of melting and freezing continues until rock breaks.

4- Oxygen reacts with iron in rocks to create yellow – colored rust .

5-Chemical weathering breaks the rocks into smaller pieces

Weekly assessment :

Test (1)

Answer the following questions :

1- Complete the following sentence:

Chemical weathering ..... the structure of rocks.

2- Write the scientific term :

Breaking down the rocks into pieces without any change in its structure .

3- Give reasons: Some rocks appear red .

4- What happens when: Acid rain falls on the rocks.

5- What are the differences between the chemical weathering and mechanical weathering?

Test (2)

Answer the following questions :

1- Complete the following sentence:

Mechanical weathering ..... the structure of rocks .

2- Write the scientific term:

Breaking down the rocks into pieces with a change in its structure.

3- Give reasons: Oxygen causes a chemical weathering .

4- What happens when: Water infiltrates and accumulates within the fine- grained rocks.

5- What are the similarities between the chemical weathering and mechanical weathering?

Test (3)

Answer the following questions :

1- Complete the following sentence:

From the factors that affect the rocks..... and..... .

2- Write the scientific term :

A type of weathering that causes by melting and freezing of water inside the rocks .

3- Give reasons: Lichens cause chemical weathering .

4- What happens when: Oxygen reacts with iron found inside the rocks.

5- Mention one difference between chemical & mechanical weathering .

Concept One : Breaking Down and Moving Rocks **Week (11)**

Lesson (4) and lesson (5) **Date: / /**

Classroom Performance:

Erosion :

Erosion is a process that occurs when nature moves rocks and sand from one place to another, just as the wind moves leaves, it also moves sand.

Erosion

Look at the figure, think about it with your partner, and then answer:

- Imagine you are on a trip to the desert and you see sand dunes. How were these dunes formed?

.....

.....

- Guided by the image, concluded two factors of erosion.

.....

.....

- What is the difference between weathering and erosion?

.....

.....

- What is the relationship between water speed & occurrence of erosion?

.....

.....

- How can humans reduce the harmful effects of erosion?

.....

.....

Deposition

After rocks break down due to weathering and are transported by erosion, the final stage is deposition , which is the process of depositing these sediments in new places.

Deposition

Look at the figure, think about it with your partner, and then answer:

- What is the relationship between erosion and deposition?

.....

.....

- How does deposition affect the shape of riverbanks and river channels? .....

.....

.....

- Why do sediments settle when the wind calms down?

.....

.....

- Extract from the image the new landforms that have been created by deposition .

.....

.....

.....

- Suggest a way to utilize deposition in agriculture or construction..

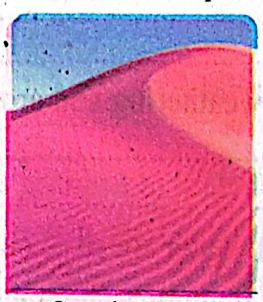
.....

.....

Have you noticed how the earth around us is changing? Rocks break, sand moves, and new places are formed!

These changes do not happen by chance, but are the result of three important natural processes: weathering, erosion, and deposition.

Weathering



Sand Dunes

Nile River Delta

Look at the previous images, think about it with your partner, and then answer:

- What is the process that helped to form the Nile River delta?

.....

.....

- How can weathering affect the shape of mountains?

.....

.....

Look at the image of sand dunes. What process led to their formation?

.....

.....

Homework (Performance):

Complete the following statements:

1- Dunes are formed due to ..... .
2- There are a relation between ..... and deposition.
3- From transferring factors .....,.....and ..... .
4- Sediments create river..... .
5- Rocks and soil are moved around by the effect of ..... .

Read the following statements and then correct the wrong one:

1- Gravity pulls rocks down mountainsides .
2- Stronger winds will blow less sand and move it farther .
3- When the sand is left in a new place, it has been deposited.
4- Erosion and weathering are the same processes.
5- Weathering and deposition may take place together .

Weekly assessment :

Test (1)

Answer the following questions :

1- Complete the following sentence:

The rocks may erode after ..... process.

2- Write the scientific term : The process that occurs when sand or rocks are moved from one place to another .

3- Give reasons: There are a relation between erosion and weathering.

4- What happens when: Breaking rocks into small pieces.

5- Mention the difference between erosion and deposition and rearrange the two processes .

Test (2)

Answer the following questions :

1- Complete the following sentence:

..... pull sand away from beaches.

2- Write the scientific term : The pieces of weathered rock that moved from its place.

3- Give reasons: The deposition is a very important process.

4- What happens when: The waves crash the beach.

5- Mention the difference between weathering and deposition and which of them occur first ?

Test (3)

Answer the following questions :

1- Complete the following sentence:

The sand grains accumulate on the top of each other forming .....

2- Write the scientific term :

The process that happen after erosion and causes the formation of delta .

3- Give reasons: Weathering and erosion change landforms.

4- What happens when: Sediments settling.

5- Mention one difference between the formation of dunes and formation of delta .

Monthly exercise (2)

Complete the following sentences:

1. Rocks break down into small pieces in its place and are transported by the ..... process to another place.
2. ..... is a natural process that takes years and its effects on rocks to become happen. ,
3. Due to weathering, erosion, and deposition processes, the ..... of northern Egypt were formed.
4. Wind carries sand and deposits it on the ground in a new place through the ..... process.
5. The melting and freezing cycle of water in the rocks cracks helps in the .....weathering of rocks.
6- ..... causes weathring of rocks, like lichens, over time, producing acid within the rocks.
7- ..... grows in rock cracks and works to break them down into small pieces.

8- Caves formed inside of the mountain due to..... weathering which forms rust due to wind and rain.
9- Mechanical weathering continues to break down rocks until they become .....
10- From the large canyons , the Nakhr Valley in..... and the Colored Canyon in .....
11- The generated energy by the force of water through huge generators is called .....
12- Water, wind, and solar energy are sources of..... energy.
13- Coal, oil, and natural gas are sources of .....energy.
14 - If you are asked to heat food in a safe, clean, and inexpensive way, you might use a .....
15 - Watermills and windmills are considered sources of ..... energy.

Complete the following sentences with the suitable words between brackets:

(Dam - Weathering - Turbines - Canyons)

1. Wavy cliffsides and high peaks indicate the formation of a .....
2. Water flow can be controlled by ..... to increase its potential energy.
3. …….. produce electricity through generators in the dam.
4. One of the processes that changes the Earth's landforms is .....

Give reasons for:

1- When rocks are weathered, they break down into smaller pieces and are transported to a far place.
2- Deposition is the final stage for breaker rocks.
3- The accumulation of sediments leads to the formation of new landforms.
4- There is a relationship between weathering, erosion, and deposition.
5- The Western Desert in Egypt was formed over the years from sand dunes.
6- Sandcastles disappear near the beach.

Write what the following statements refer:

1- The energy emitted from the sun to provide heat in a solar cooker.
2- A large Canyon formed by environmental factors over time, located in Oman.
3- The deposition of sediments resulting from the breaking down of rocks into small pieces and their accumulation near the beach.
4- The process of changing the Earth's landforms due to weathering factors.
5-The interaction of air and water with rocks leads to break down rocks and showed in a red color.

Mention the importance for each one of the following:

1- Watermills and windmills.
2- Wind turbines.

3- Water downhills and waterfalls.
4- Dams over rivers.
5- Electric generator.
6- Solar cooker.
7- Water, wind and heat in weathering, erosion and deposition processes.
8- Oxygen in the process of chemical weathering.

Choose the correct answer between bracets:

1-The presence of sand dunes or sediments in a region, tell us that they are…….
(Eroded in their place - Weathered in their place - Weathering and erosion - Erosion and deposition)

2. Which of the following landforms is steep and was formed due to the very flow of water ?
(Plains - Mountains - Canyons - Valleys)

3- Red rust in sedimentary rocks indicates happening of the…… process.
(erosion of rocks - mechanical weathering – chemical weathering- deposition of rocks)

4-When rocks break down due to temperature changes, this indicates a process of ……..
(Mechanical weathering - Chemical weathering - erosion by breakdown- Water precipitation)

5- The mixing of acidic water with rocks causes .....
(mechanical weathering - chemical weathering - freezing water- rock movement)

6- ……. are from examples for sources of energy that are consumed by humans faster than they are created.
(Solar energy - Wind energy - Hydroelectric energy - Fossil fuels)

7. …… are from examples of renewable energy sources.
(Water - Coal - Natural gas - Fossil fuels)

8-The energy produced by turbines is called .....
(potential energy - kinetic energy - chemical energy - hydroelectric energy)

9 - To convert light energy into electrical energy, we use .....
(windmills - solar panels - wind turbines - water turbines)

10 - One of the benefits of the sun is the production of .....
(light energy - radioactive energy - kinetic energy - thermal energy)

Put (√) or (×):

1- The increase of the water flow, the increase of the erosion. ( )
2- The walls of canyons are not very high and have small slopes. ( )
3- A computer depends on kinetic energy. ( )
4- A ceiling fan depends on electrical energy. ( )
5- The function of TV devices depends on hydroelectric energy. ( )
6- To power the cell phone depends on potential and kinetic energy. ( )

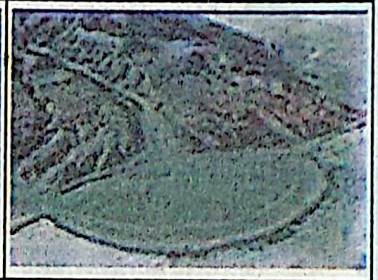
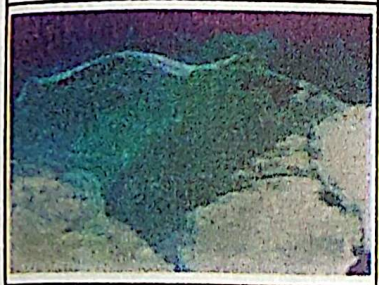
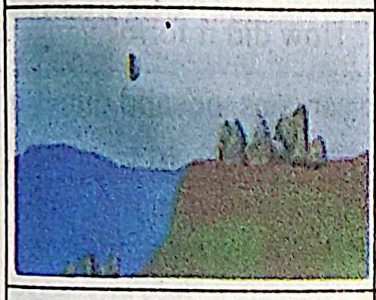
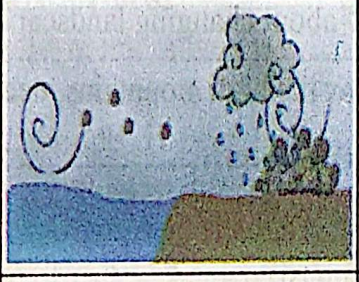
Concept two : Changing Landscape Week (12)

Lesson (1) and (2) Date: / /

Classroom Performance:

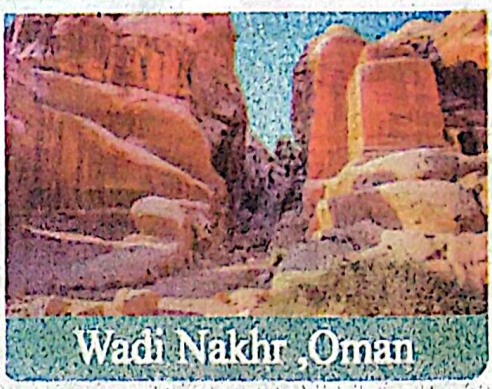
. (Weathering → Erosion → Deposition)

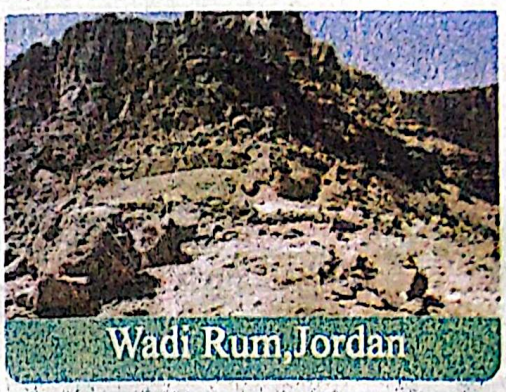
In front of you a group of images. Note them well, then put each image to the process it belongs to:

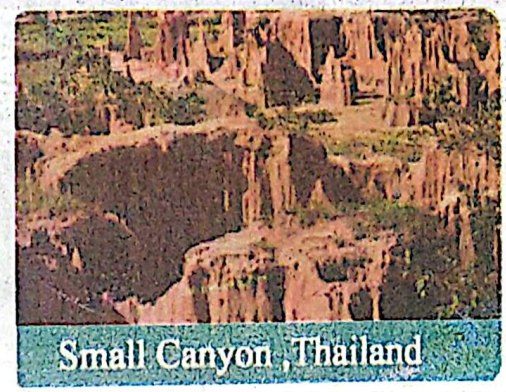
		
.....	.....	.....
		
.....	.....	.....
		
.....	.....	.....
		
.....	.....	.....

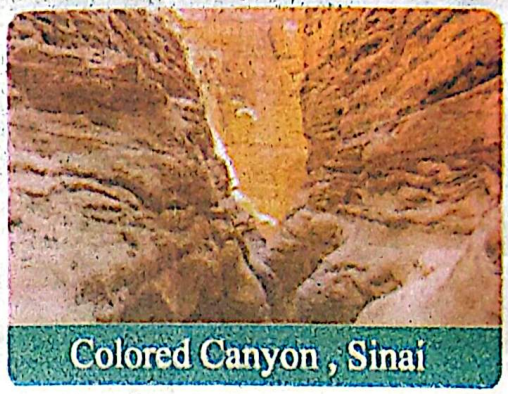
Canyons

When water moving over the dirt or sand, it pushes some of it and leaves a traces behind. Over time, this traces may develop at long time into a canyon, which is a long, narrow lowland caused by the movement of water.


Wadi Nakhr ,Oman


Wadi Rum,Jordan


Small Canyon ,Thailand


Colored Canyon , Sinai

Notice previous images and think with your partner, then answer:

- Are all Canyons the same? What are the similarities and differences?

.....

.....

- How does running water help in the formation of Canyons?

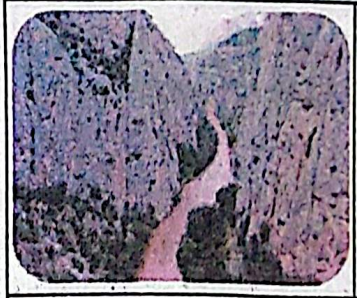
.....

.....

What do you already know about changing landscape? How did it form?

Have you ever thought how the high mountains, deep canyons, or sand dunes of the desert came to be?

Look at the images and then answer: Write under each image the name of the type of landforms.

	
(1)	(2) .....
	
(3)	(4) .....

Eextract from the images the Landform that was happened by deposition.

.....

.....

Concept two : Changing Landscape **Week (13)**

The rest of Lesson (2) and (3) **Date: / /**

Classroom Performance:

Canyons Formation

Canyons are deep paths between rocks, formed when water or wind erodes soil and rocks from their place.

Note the image, then complete the sentences to explain how the canyons are formed:

- The process that helped to form the canyon is .....
- Rivers carve out the valley, the shape of the valley depends on factors including the type of ....., the speed of the ....., its age, and its size.
- The water was moving very quickly due to ..... which leads to eroding a lot of sediments.
- Canyons are a special type of valley characterized by .....
- ..... pulls rainwater downhill.

Homework (Performance):

Complete the following statements:

1- Fast moving rivers can cause a lot of ..... .
2- Grand Canyon is a landform in .....
3- .....pulls rain water downhill .
4- Valleys can be formed by .....or ..... .
5- Canyon walls are ..... .

Read the following statements and then correct the wrong one:

1- A Canyon is a type of valley.
2- The formation of canyons take place during tens of years.
3- The greater the water flow, the greater the weathering .
4- Larger streams or rivers produce greater change .
5- Rivers can change a landform very slowly.

Weekly assessment :

Test (1)

Answer the following questions :

1- Complete the following sentence:

..... or rivers lead to appearance of greater change.

2- Write the scientific term : A type of valley .

3- Give reasons: Rainwater downhill.

4- What happens when: Rivers dry up.

5- What are the similarities between, canyons and valleys?

Test (2)

Answer the following questions :

1- Complete the following sentence:

Grand Canyon is a type of ..... in North America.

2- Write the scientific term : Lowland areas found between mountains.

3- Give reasons: Canyon does not form quickly.

4- What happens when: The greater the water flow.

5- What are the differences between canyons and valleys ?

Test (3)

Answer the following questions :

1- Complete the following sentence:

From the examples of canyons are ..... or .....

2- Write the scientific term :

Landforms that form by the processes of erosion and deposition.

3- Give reasons: Gravity has an important role in the formation of canyon

4- What happens when: The water was traveling down a steep slope

5- Compare between the canyon and valley in terms of the characteristics of their formation .

Concept two : Changing Landscape **Week (13)**

The rest of lesson (3) and (4) and (5) **Date: / /**

Classroom Performance:

Canyons and valleys

The land around us is changing due to natural factors such as water and wind.
These factors form landforms such as canyons and valleys.

Look at the image, think with your partner, then answer:

- Compare between a canyon and a valley in terms of shape and formation.

Point of comparison	Canyons	Valleys
Shape	.....	.....
	.....	.....
	.....	.....
Formation	.....	.....
	.....	.....
	.....	.....

- Imagine you are a geologist, how would you explain the formation of the Grand Canyon?

.....

.....

- Why do Canyon take long time to form?

.....

.....

- How canyons and valleys change over time?

.....

.....

Delta Formation

Deltas are formed when rivers carry sediment and deposit it at the end of their path, forming new land. The Nile Delta is one of the most famous deltas in the world and is a fertile and important agricultural region in Egypt.

Read the text well and look at the image, then think about it with your partner and answer.

- What is a delta?

.....

.....

- Compare between the formation of deltas and canyons in terms of the natural processes that lead to each.

.....

.....

Where is the Nile Delta located? And why is the Nile Delta important to farmers in Egypt?

.....

.....

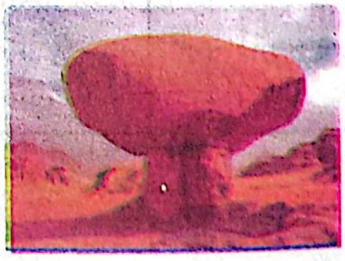
What factors might affect the amount of sediment that the river carries?

.....

.....

Wind Erosion

Wind pick up sand and it hits rocks, changing their shape over time
This process is called erosion, and it is one of the natural forces that shape the Earth's surface, especially in desert regions.



Read the text and look at the image, then answer:

- What are the factors that increase the erosion caused by wind?

.....

.....

- Does erosion happen in the desert only?

.....

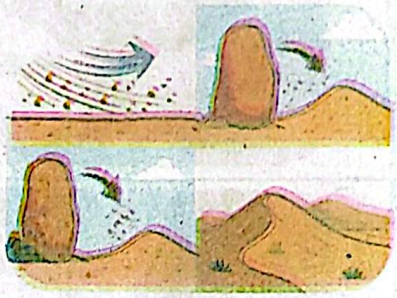
.....

- Compare between erosion and weathering in terms of cause and result.

process	Erosion	Weathering
Cause	.....	.....
Result	.....	.....

Sand Shifters

The sand is moved by the wind and affects the rocks, causing erosion. When the wind is calmed, the sand is deposited and forms sand dunes.
This process does not stop, but continues to change the shape of the Earth's surface over time.



Read the text and look at the image, then answer:

- Describe how sand dunes are formed, and why they are considered a landscapes of erosion.

.....

.....

- Do sand dunes always stay in its place?

.....

.....

- How do rocks or plants affect the formation of sand dunes?

.....

.....

- Suggest a way to reduce the impact of sand dune movement on nearly cities.

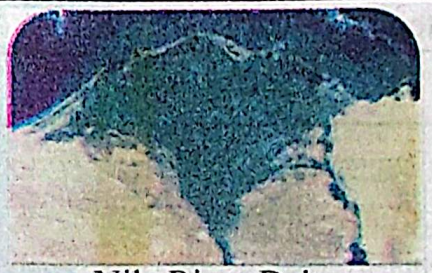
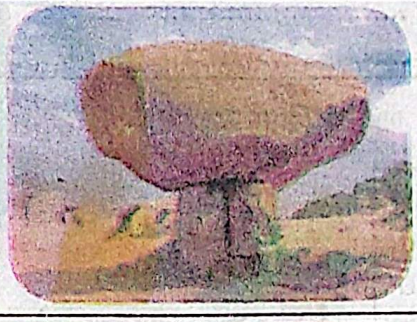
.....

.....

Describing Landforms:

Write the reason for the formation of each landform in the following table, noting that there may be more than one reason for its formation

(Choose: deposition - weathering - erosion - water - sand - wind):

Landforms	Reason
 Nile River Delta	....
	....
 Colored Canyon, Sinai	....
	....

Homework (Performance):

Complete the following statements:

1- Wind and sand work together to…….. rocks .
2- Deltas are formed by …….. process.
3- Wind and sand work together as forces of ……..and…… .
4- The Nile River …….. in shape .
5- Dunes can be ……..of meters tall .

Read the following statements and then correct the wrong one:

1- The Nile River Delta is the famous delta in the world
2- Deltas are formed by weathering.
3- Sediments are made of very fine bits of sand, clay or rock materials .
4- Most delta are formed where flowing water enters still water .
5- Sand dunes are hills that are made of sand.

Weekly assessment :

Test (1)

Answer the following questions :

1- Complete the following sentence:
Canyons are formed by …… .
2- Write the scientific term : Hills that are made of sand .
3- Give reasons: Deposition is very important process in agriculture .
4- What happens when: Rivers become slow moving.
5- Mention how does the wind affect the sand?

Test (2)

Answer the following questions :

1- Complete the following sentence:
Valleys are formed by ……...
2- Write the scientific term : Deep valleys with steep sides .
3- Give reasons: The Nile River Delta is a suitable place for agriculture .
4- What happens when: The flowing water does not enter still water .
5- Mention how does sand dunes form?

Test (3)

Answer the following questions :

1- Complete the following sentence:
Deltas are formed by …….. .

2- Write the scientific term : Very fine bits of sand , clay or rock materials

3- Give reasons: The Nile River Delta is the most famous delta in the world.

4-What happens when: Erosion and deposition processes happen at the same time .

5- Mention how does the delta form ?

Model Exams :

Exam (1)

Question 1

1- Correct the following statement:

The main source of energy on Earth's surface is air.

2- Give reason:

- Energy transformations happen in mobile phones.
- Biofuels are a renewable energy source.
- There is a difference between chemical weathering and mechanical weathering.
- Delta formation.

Question 2

1- Write the scientific term for:

- A source of clean energy for the environment.

2- Compare between:

- The energy transformation in an electric light bulb and the energy transformation in a hair dryer.
- Renewable and non-renewable energy sources, giving an example.
- Erosion and weathering.
- The formation of canyons and sandcastles.

Question 3

1- Complete the following statements:

- The input energy to a battery is..... energy
- The rock pieces breakdown by weathering are known as .....

2- What happens when:

- A fan is turned on in the house.
- Fossil fuels are consumed in large quantities.
- Many sediments carried by a river are deposited.

Question 4

1- Cross out the odd word:

- fan - washing machine - blender - battery
- solar energy - coal - biofuel - wind

2- What are the consequences of:

- lighting an electric light bulb

- increasing heat and pressure on the remains of living organisms
- breaking down rocks.

Exam (2)

Question 1

1- Correct the following statement:

Solar panels convert solar energy into light energy.

2- Give reason for:

- Energy transformations occur in a hair dryer.
- Wind can be used to generate electricity.
- There is a difference between erosion and weathering.
- The formation of canyons.

Question 2

1- Write what the following statement means:

The process of breaking rocks into small pieces.

2- Compare between:

- The output energy of an electric heater and the energy output of an electric washing machine.
- Biofuels and fossil fuels.
- Chemical weathering and mechanical weathering.
- Valleys and canyons.

Question 3

1- Complete the following statements:

- From renewable energy sources are ..... and .....
- There is a relationship between the..... processes and deposition.

2- What happens when:

- Water is wasted and polluted.
- Life without electricity.
- Breaking down of Rocks.

Question 4

1- Cross out the odd word:

- Battery - Solar panels - Lamp - Solar battery
- Oil - Natural gas - Fossil fuel - Water

2- What are the consequences of:

- Using a hair dryer
- Moving turbines with water
- Sediments settling.