مشروع بناء برامج تعويضية

لصعوبات تعلم المواد الدراسية للاجئين السوريين

لبنان – الأردن – تركيا (الداخل السوري)

الدليل المرجعي

لصعوبات تعلم العلوم

للحد من الفاقد التعليمي لدى اللاجئين السوريين

6

الصف السادس الابتدائي

التميز الانساني

المنظمة الإسلامية للتربية والعلوم والثقافة

ISESCO

IsDB البنك الإسلامي للتنمية Islamic Development Bank

6

الدليل المرجعي

لصعوبات تعلم العلوم

الصف السادس الابتدائي

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أ/ زينب بلبل

معلمة العلوم في مدارس الكويت الخيرية

أ/ سماح ملص

معلمة العلوم في مدارس الكويت الخيرية

أ/ سحر عواد

معلمة العلوم في مدارس الكويت الخيرية

أ/ مروان زريقة

معلم العلوم في مدارس الكويت الخيرية

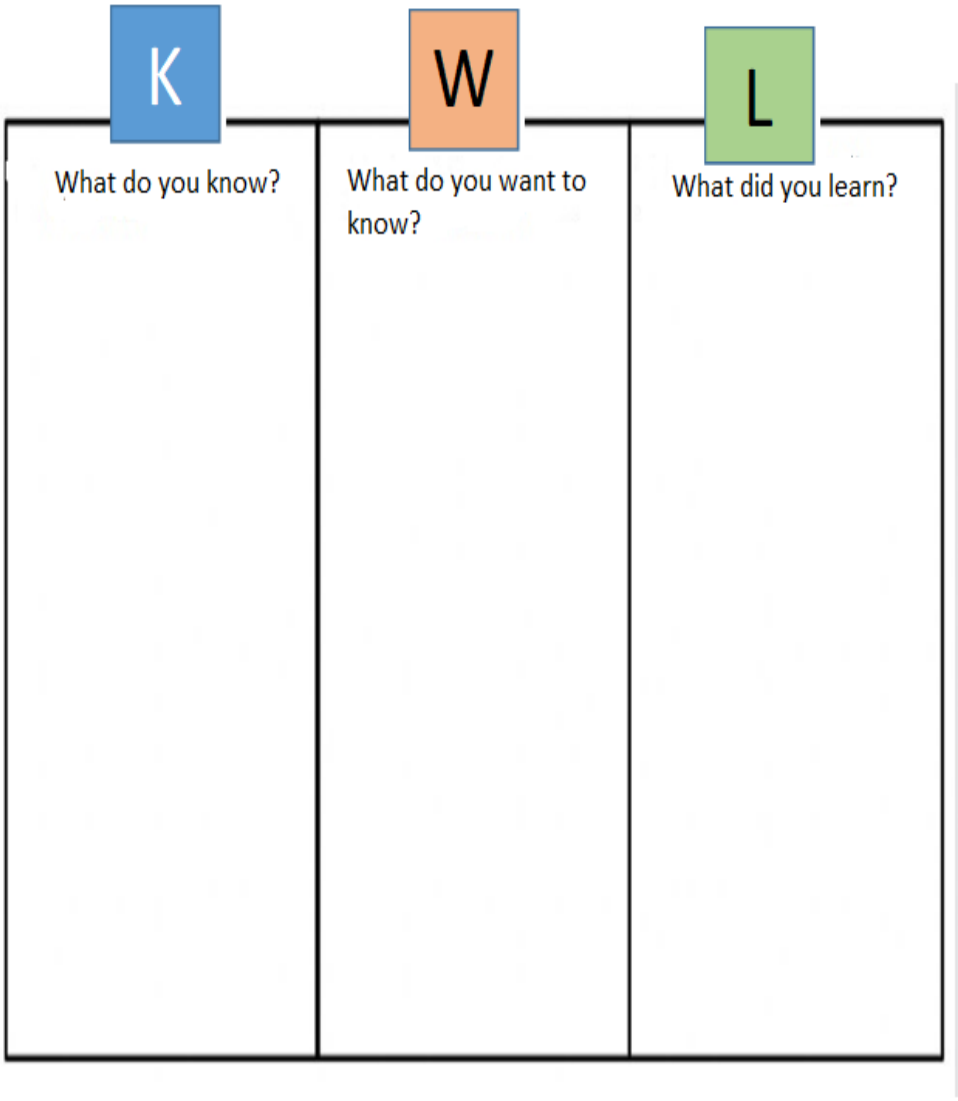
تدقيق ومراجعة

أ/ نسرين قاسم

منسقة العلوم في مدارس الكويت الخيرية

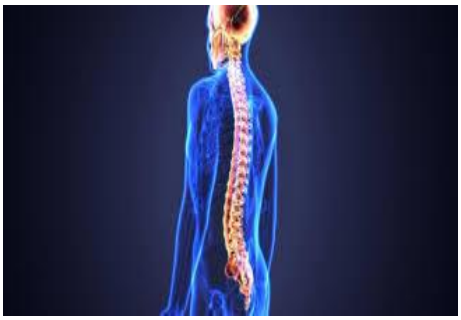
Slide 1

Topic: Body Systems (Nervous System and Skeletal System)

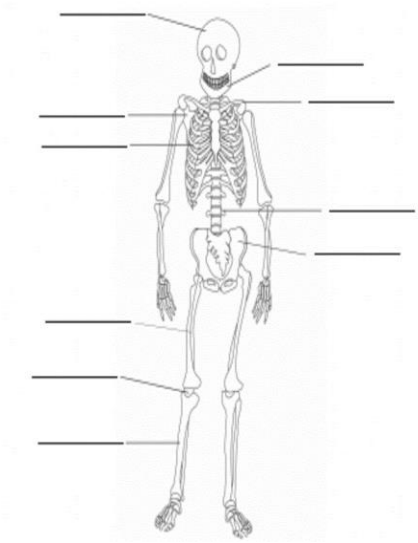


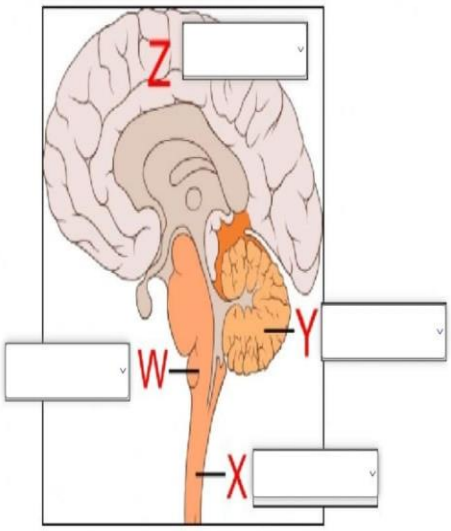
Worksheet 1

Indicate which is the nervous system, and which is the skeletal system.



Label the skeletal and nervous systems by using words from the parentheses (Medulla Oblongata- Hemispheres- Cerebellum- Brain stem- Jaw bones- Pelvis- Scapula- clavicle- Shinbone- Skull- Femur- Rib- Vertebrae - Knee).





Worksheet 2

Match:

Column (A)	Column (B)
Responsible for maintaining the balance of the body	Hemispheres
Responsible for the reflex action	Skull
Responsible for involuntary processes such as breathing and digestion	Vertebral column
Occupies the largest part of the brain	Cerebellum
Their number is 31 pairs	Ribcage
Bones that protect the brain	Medulla oblongata
Bones that protect the heart	Cerebral nerves
Bones that protect the spinal cord	Spinal cord
Articulation which allows flexion and extension and rotation	Spinal nerves
Their number is 12 pairs	Knee joint

Slide 2

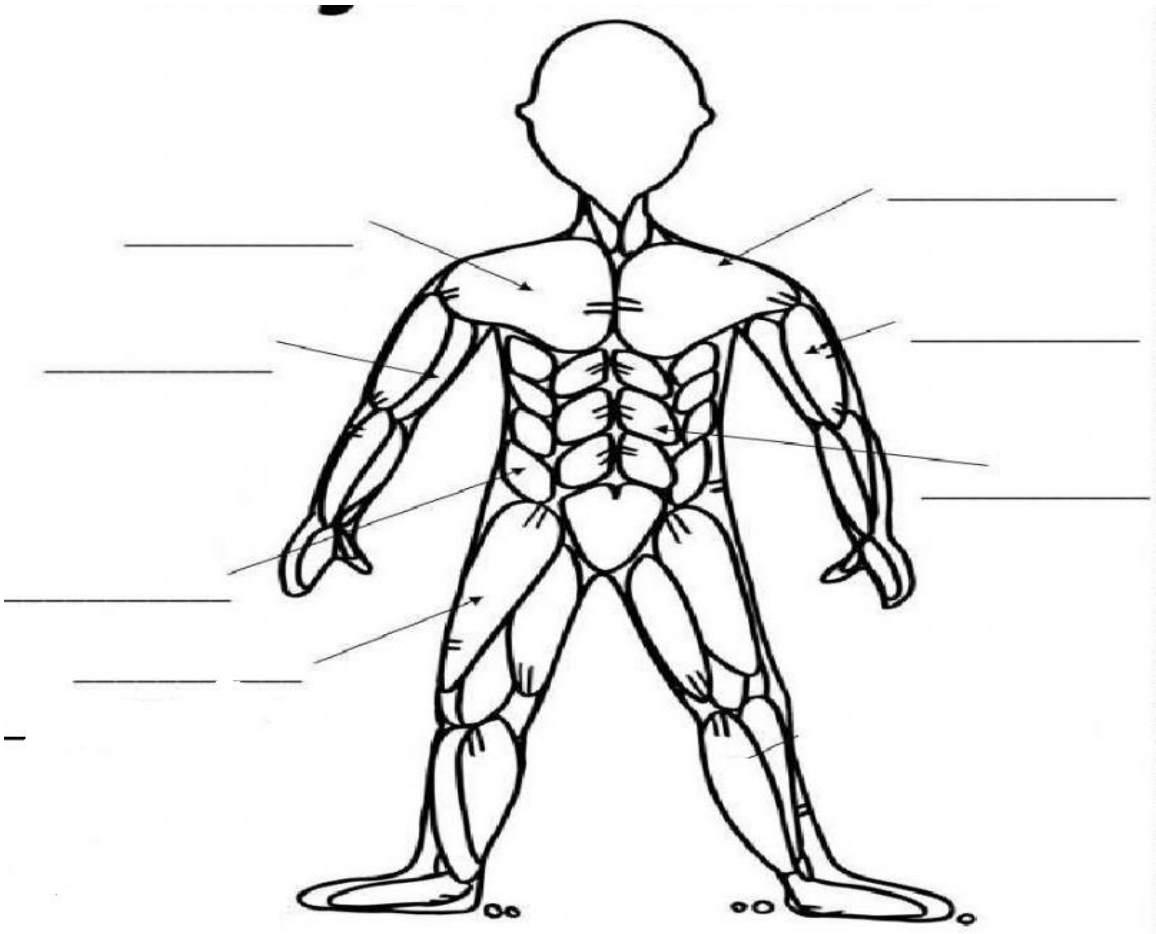
Indicate by true or false:

No.	Statement	True	False
1	There is no relationship between nervous system, digestion, breathing and movement.		
2	Both the central and the peripheral nervous system have the same function in our body.		
3	The cerebral and spinal nerves belong to the central nervous system.		
4	Both the cerebellum and medulla oblongata have the same function.		
5	The bone marrow and the spinal cord are same.		
6	Nerve cells and somatic cells have the same structure.		
7	The joints, muscles, and eyes are responsible for reflex actions not the nervous system.		
8	The central nervous system is responsible for transmitting sensory and motor responses from parts of the body to the brain.		
9	The human body is made up of 100 bones.		
10	The vertebral column consists of 20 vertebrae.		
11	The femur is a part of the axial skeleton.		
12	The bones of the skull are semi-mobile joints.		
13	The elbow joint is very mobile.		
14	The skull is a part of the peripheral skeleton.		

Worksheet 3

Label the figure.

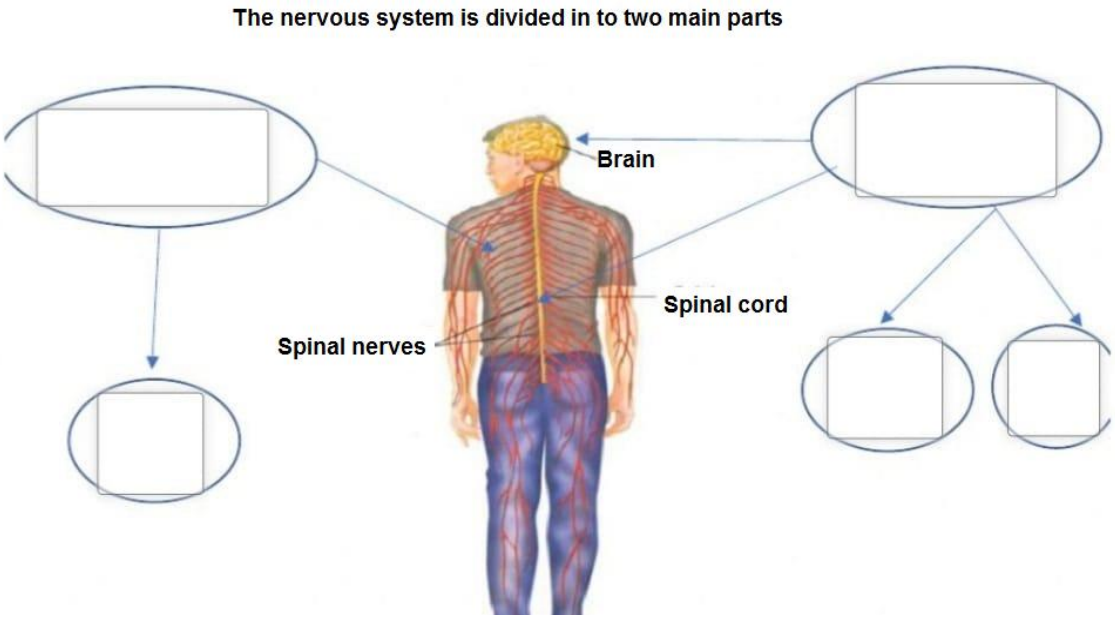
(Shoulder muscle- Chest- Biceps brachii muscle- triceps brachii muscle - Thigh muscles- Stomach muscles- Leg muscles- Oblique muscles)



Worksheet 4

Central and Peripheral Nervous System

Complete the missing data in the following picture from the video.

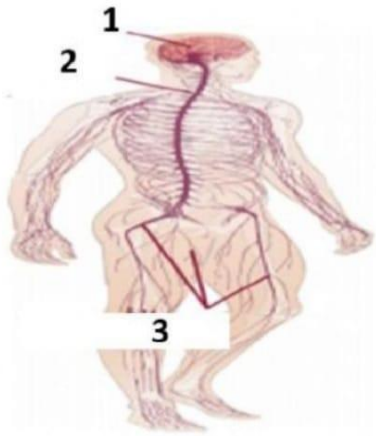


2- Label the numbers 1, 2 and 3.

spinal cord ☐

periperal nerves ☐

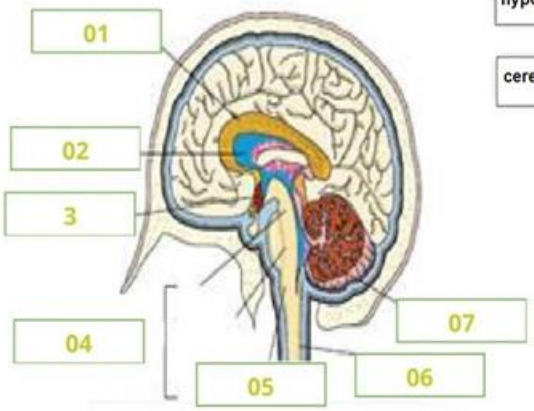
brain ☐



Worksheet 5

Components of the Central Nervous System

Dear students, cut the components in the boxes and paste them correctly on the image of the following central nervous system:

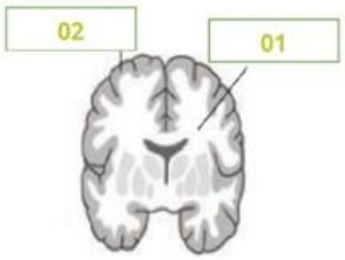


medulla oblongata | brain stem

hypothalamus | Corpus callosum

cerebellum | spinal cord

thalamus



Frontal longitudinal section of the brain

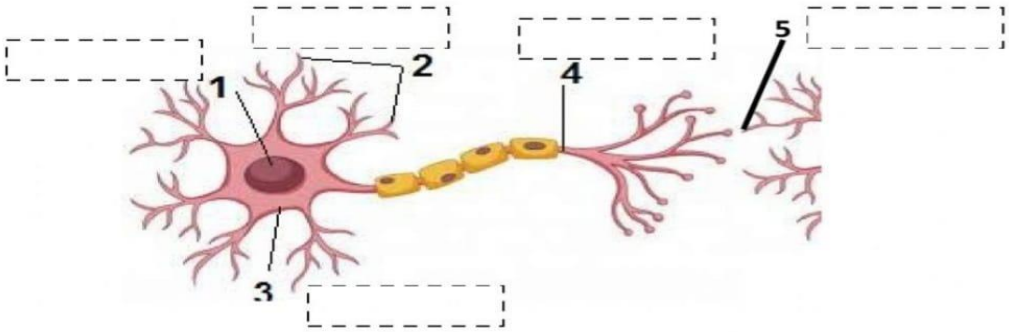
White matter

gray matter

Worksheet 6

Nerve Cell

Label the nerve cell diagram.



synaptic cleft | nervous appendages | nucleus | cell axis | cell body

Deduce the difference between the components of a nerve cell and the components of any somatic cell out of your prior knowledge.

……
……
……

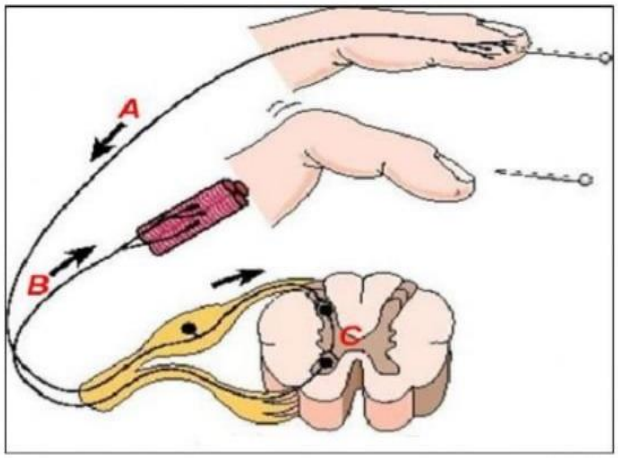
Worksheet 7

The Reflex Action

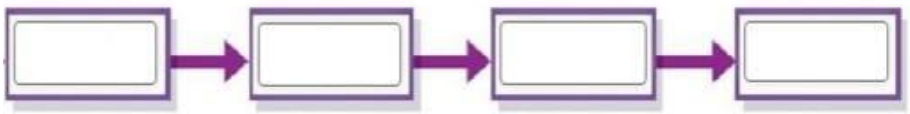
Complete the mechanism of the reflex action in the figure below.

put the following statements in their correct place to illustrate the (reflex)

interstitial conductive neuron | sensory neuron | motor neuron



2-Arrange the stages of a reflex action by completing the following diagram:



3-Describe how the reflex action occurs by using the previous parts 1 and 2.

……

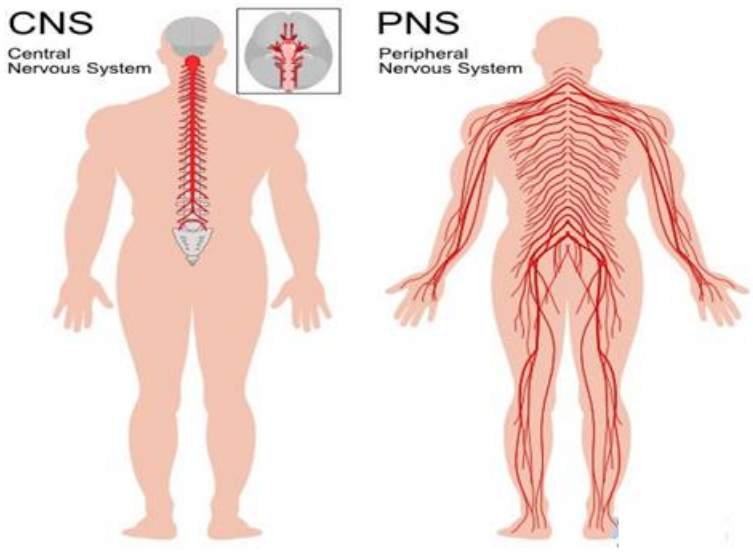
……

……

Worksheet 8

The Difference Between the Central and Peripheral Nervous System

The figure below shows both the central and the peripheral nervous systems.



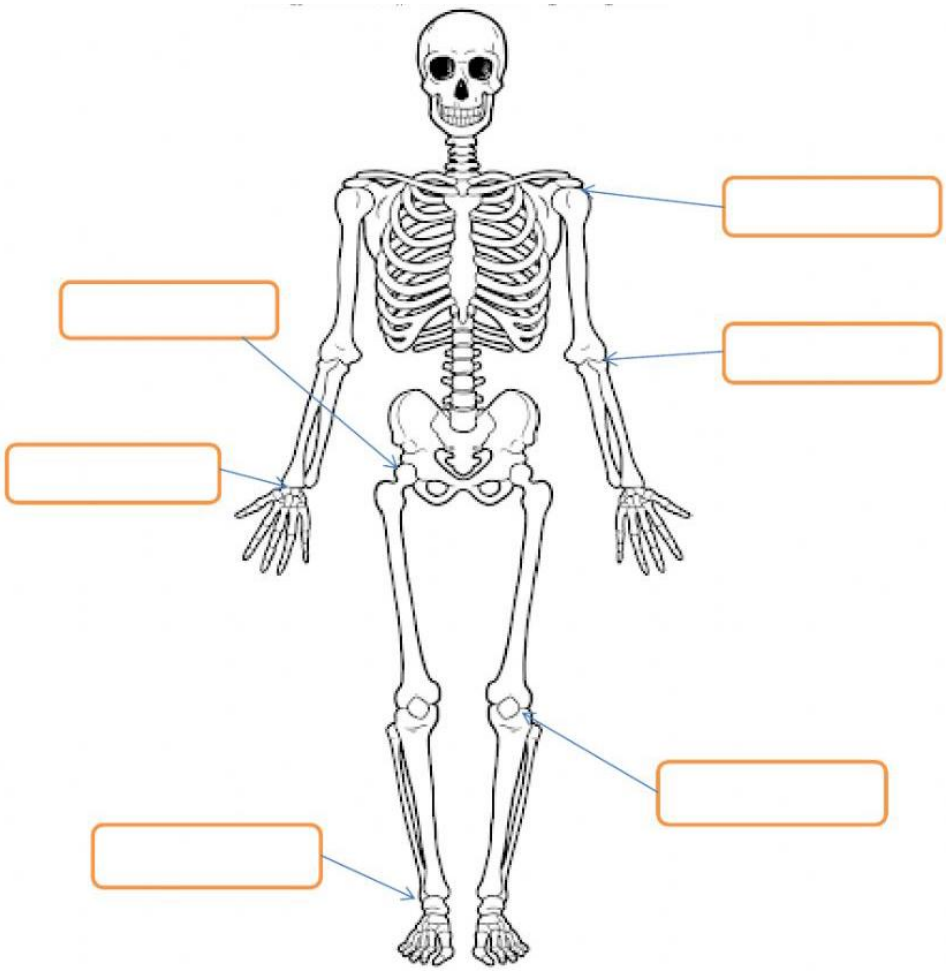
Compare between the central and peripheral nervous systems

The central nervous system	Comparison	The peripheral nervous system
	Consists of	
	Function	
	Component	
	Starts with	
	Ends with	

Worksheet 9

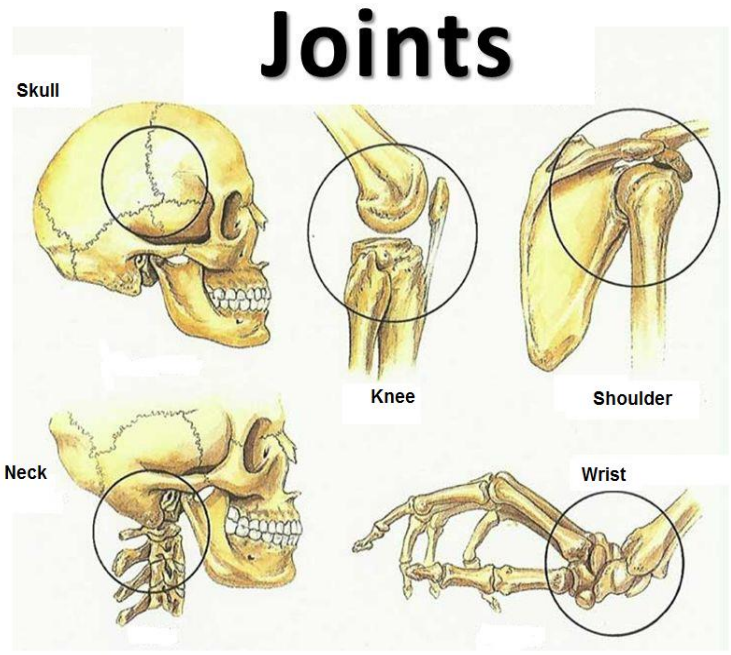
Label the figure.

(knee joint- elbow joint- shoulder joint- hip joint- ankle joint)



Worksheet 10

Classify the following joints according to their movements (very mobile-semi-mobile and immobile)



Very mobile joints	Semi-mobile joints	Immobile joints

Worksheet 11

Indicate which are good and which are bad to the nervous and skeletal systems:

1- Breathe deeply.
2- Carry heavy objects.
3- Sleep while we are sitting.
4- Sit properly.
5- Eat food rich in calcium and phosphorous.
6- Crouch while sitting.
7- Exercise regularly.
8- Eat healthy food like fish, eggs, and cheese.
9- Sit in the sun in the morning.
10- Arch while standing.

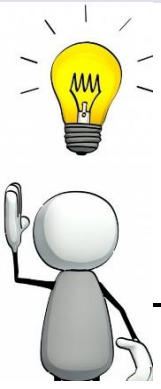
Good habits for the nervous and skeletal systems	Bad habits for the nervous and skeletal systems

Slide (1)

Learning Table

Topic: Animals

K What do you know about animals?	W What do you want to learn about animals?	L What did you learn about animals?



Wc (1)

Diagnostic Assessment

Indicate by true or false:

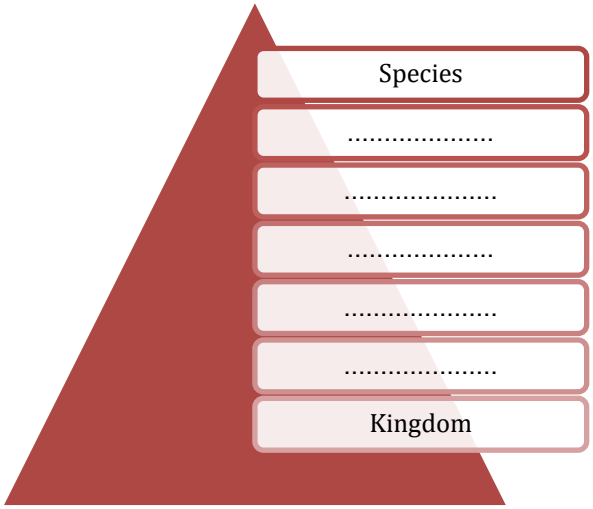
No.	Statement	True	False
1	Taxonomy is the science of classifying animals only.		
2	The hierarchical arrangement consists of (species, genus, family, order, and class) only.		
3	The kingdoms are the largest, and there are four major kingdoms.		
4	Vertebrates are animals that have a vertebral column.		
5	Invertebrates are animals that have a vertebral column.		
6	Fish and mammals are invertebrate animals.		
7	Sponge and mollusks are vertebrate animals.		
8	The body of reptiles is covered with skin.		
9	Fish breathe through gills.		
10	All invertebrates have six legs.		
11	There is an exoskeleton on the skin of worms.		

Worksheet (2)

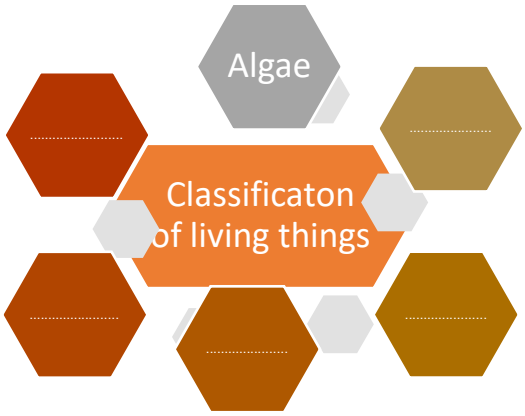
Classification of Living Things

Complete the following mental maps:

1. Levels of classification of living things:

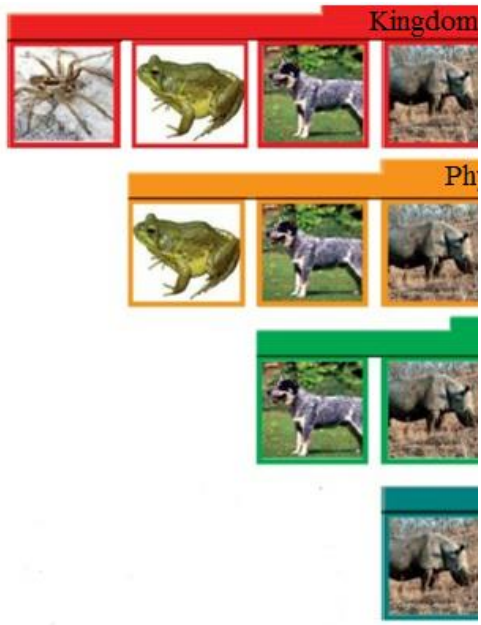


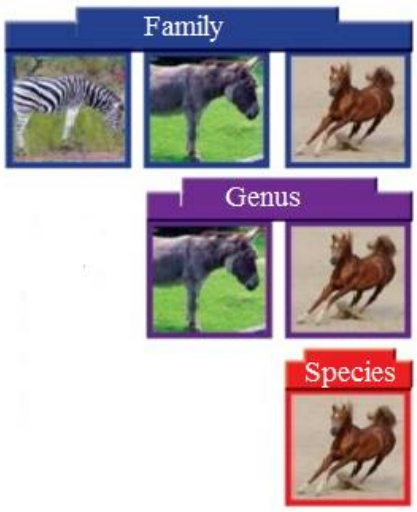
2. Classification of living things:



Slide (2)

Horse Classification





Worksheet (3)

Living Things

1. Match

Group(A)	Group(B)
The name of the largest group in the classification groups	Classification
Sorting of things using a range of similar characteristics	Kingdom
Pre-small group name in classification groups	Monera
Unicellular and without nucleus	Genus

2. Choose the correct answer:

a) They are similar to plants, do not contain chloroplasts, and cannot produce their own food, but they have a cell wall.

Fungus Bacteria Protists

b) They contain a nucleus, such as algae, which cause malaria, and many of them are considered beneficial

Fungus Bacteria Protists

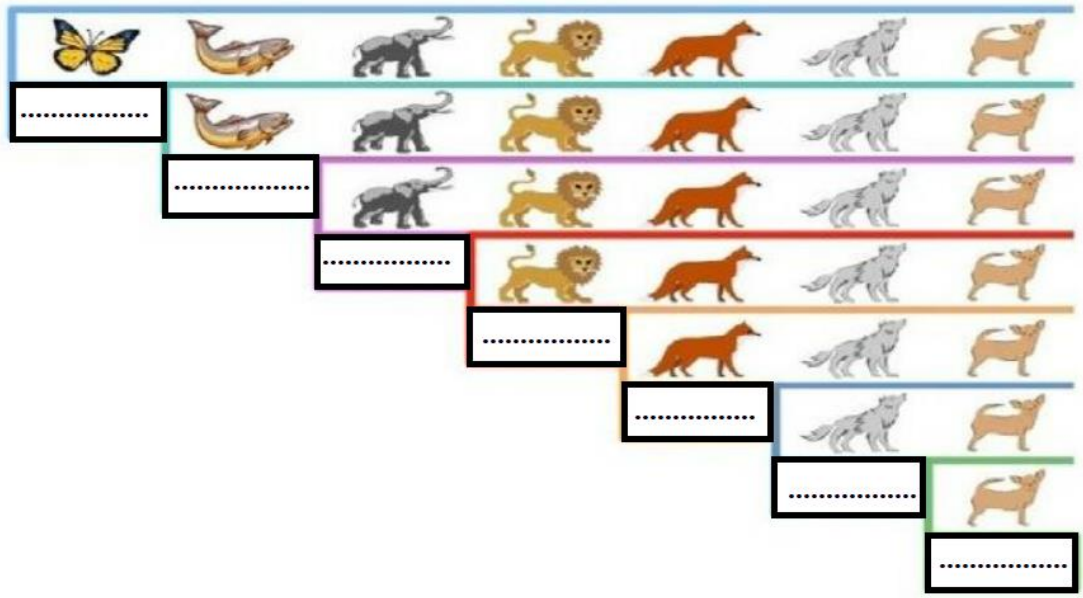
c) The smallest microorganisms decompose the remains of dead organisms to feed on them, and they do not contain a nucleus.

Fungus Bacteria Protists

Worksheet (4)

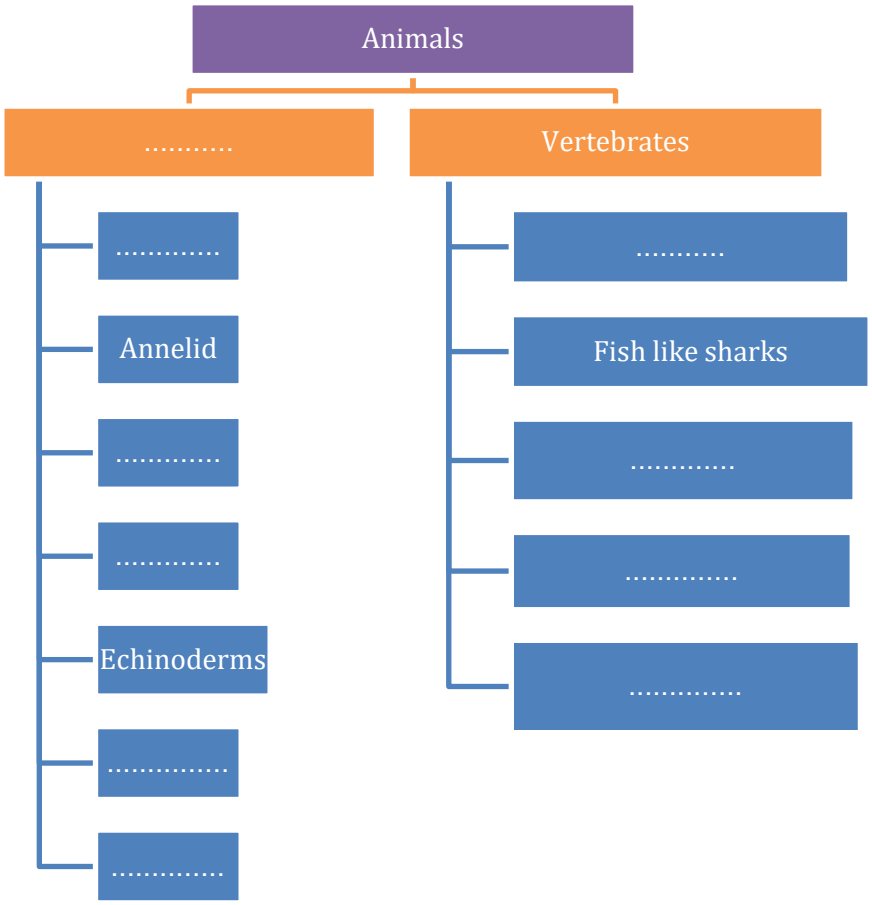
Assessment (1)

Complete the following pyramid, and explain how different living things are classified into groups



Worksheet (5)

Classification of Animals



Worksheet (6)

Vertebrates and Invertebrates

Complete the following table.

Vertebrates	Invertebrates
.....	Don't have vertebral column
Belong to animal kingdom	.....
.....	Multicellular, have no backbone, no cell wall and have heterosexual reproduction
Include parrots, snakes, etc…	.....
.....	Insects, cnidarians, etc…
Big in size	.....
.....	Represents 98% of the animals

Worksheet (7)

Assessment (2)

Complete the following dialogue between you and your classmate, and then present it to the other class:

Student 1: I am a vertebrate; I belong to the animal kingdom, what's about you?

Student 2: …… and I do not have a vertebral column, and what's about you?

Student 1: …….. but I represent 2% of the animals? What's about you?

Student 2:……

and I am classified as mollusks, insects, cnidarians, annelids, arthropods, worms, sponge, and echinoderms.

Student 1: …… , but do you have a vertebral column and nervous system like me?

Student 2: …… , I am small in size and slow in movement, like insects and worms.

Student 1:……

nice to meet you .

Second student: Nice to meet you too.

Slide (3)

Vertebrates

Grass snake

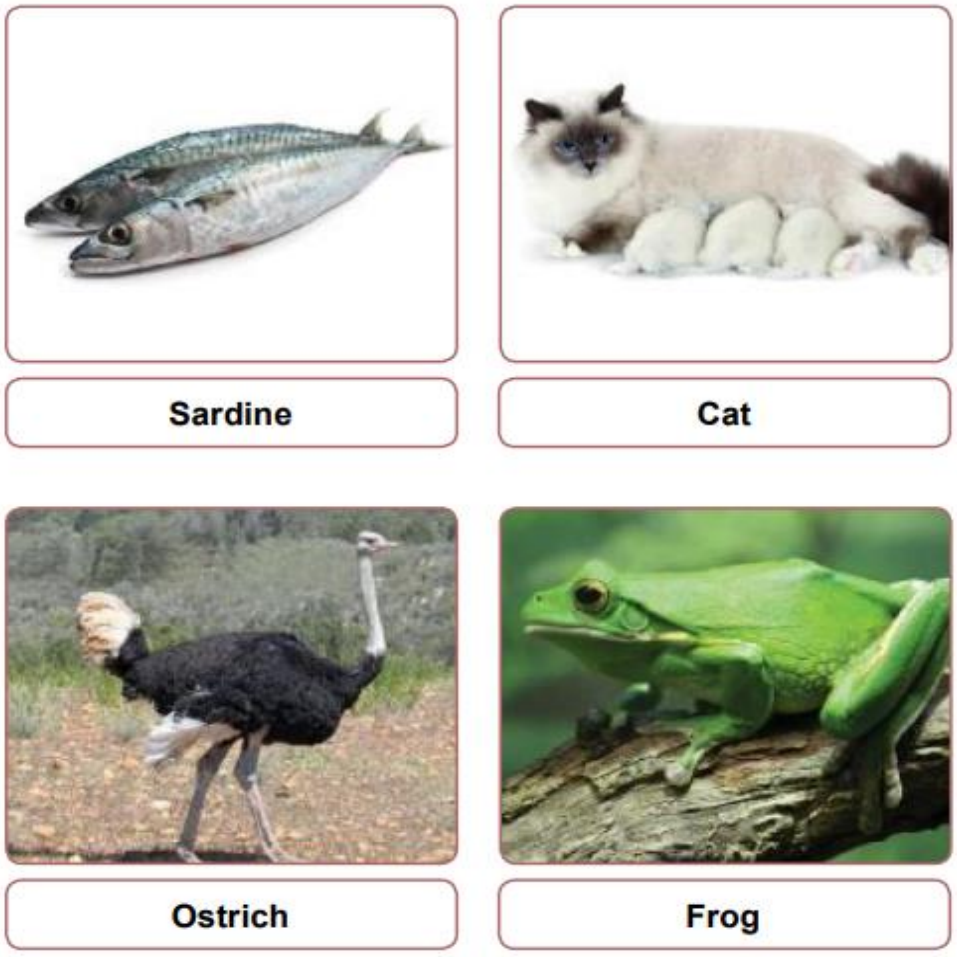
Clown fish

Salamander

Seagull

Rabbit

Lizard



Worksheet (8)

1. Observe the figures, then complete the following table by putting a cross (X)in the appropriate box:

Name of the animal	Hair	Feathers	Bare skin	Free scales	Four legs	Two legs	No legs	Lungs	Gills	lays its eggs
Sardine										
Cat										
Lizard										
Salamander										
Seagull										
Clown fish										
Grass snake										
Rabbit										
Frog										
Ostrich										

2. Classify the animals in the table according to the subgroup to which each animal belongs:

Mammals	Fish	Amphibians	Reptiles	Birds

Worksheet (9)

Assessment 3

1- Complete the following sentences with the suitable words:

All vertebrates have a …….. .

- …… have hair, …… legs, breathe through …….. .Their females give birth to their youngs.
- Birds have …… , …… legs and …… , breathe through ……..and the females lay …….. .

2- <u>Cross the intruder then justify.</u>

Group 1:

Frog Toad Duck Horse

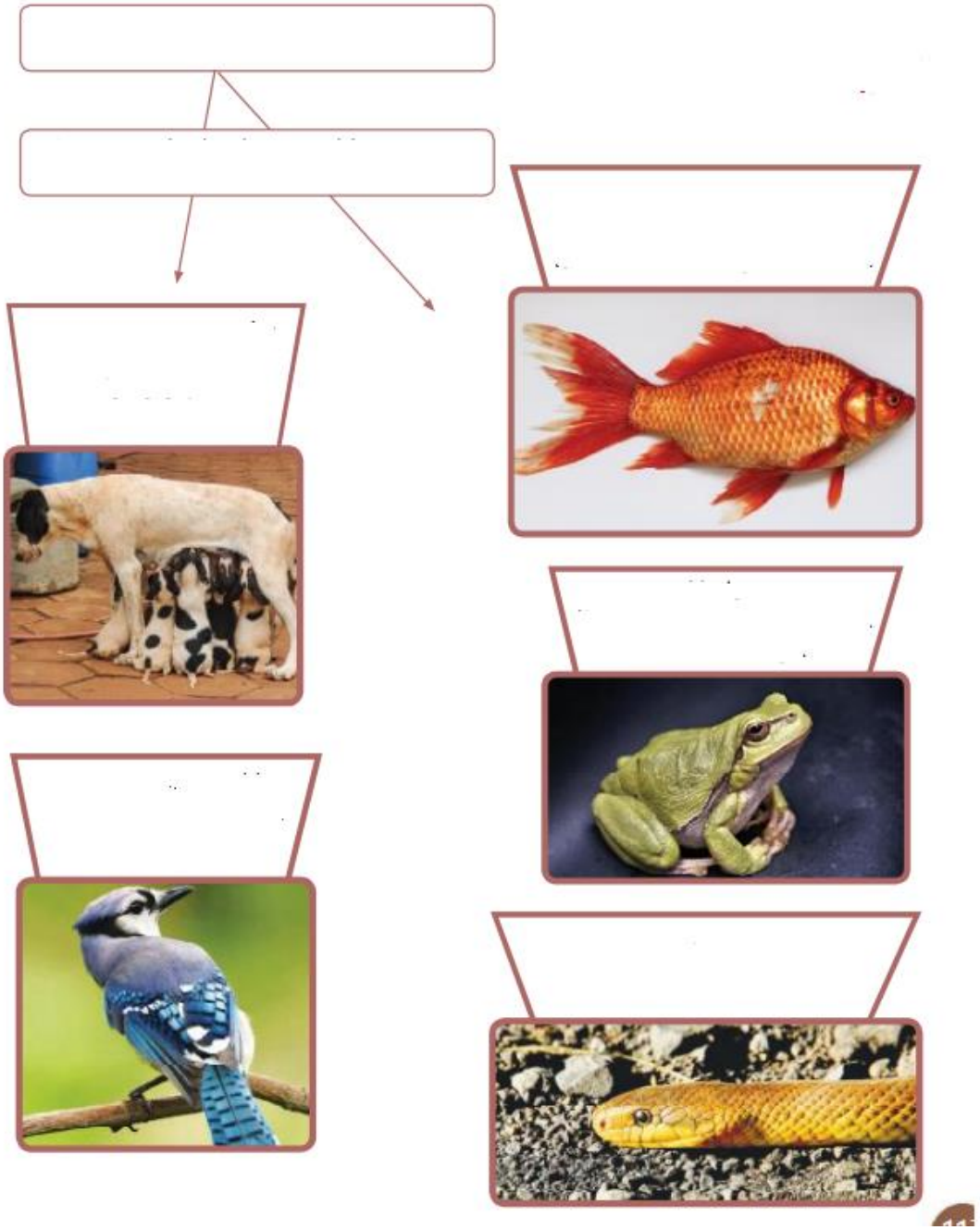
……
……
……

Group 2:

Crocodile Rabbit Hen Carp

……
……
……

3- Complete the following chart with the appropriate characteristics.



Worksheet (10)

Invertebrates

Observe, think, and then answer:

1. Complete the identity card of each of the above animals.
2. According to these identity cards, can we say that invertebrates are identical?
3. How many subgroups can we classify invertebrates into?

Name: spider

Is the skin covered by an exoskeleton? ……..

The body is divided into: …… parts.

Number of legs: .....

Name: shrimp

Is the skin covered by an exoskeleton? ……

The body is divided into: ..... parts.

Number of legs: ……

Name: earthworm

Has a shell? ……

Body: ……..

Number of legs: ……

Name: snail

Has a shell? ……

Body: ……

Number of legs: ……

Name: bee

Is the skin covered by an exoskeleton? ……

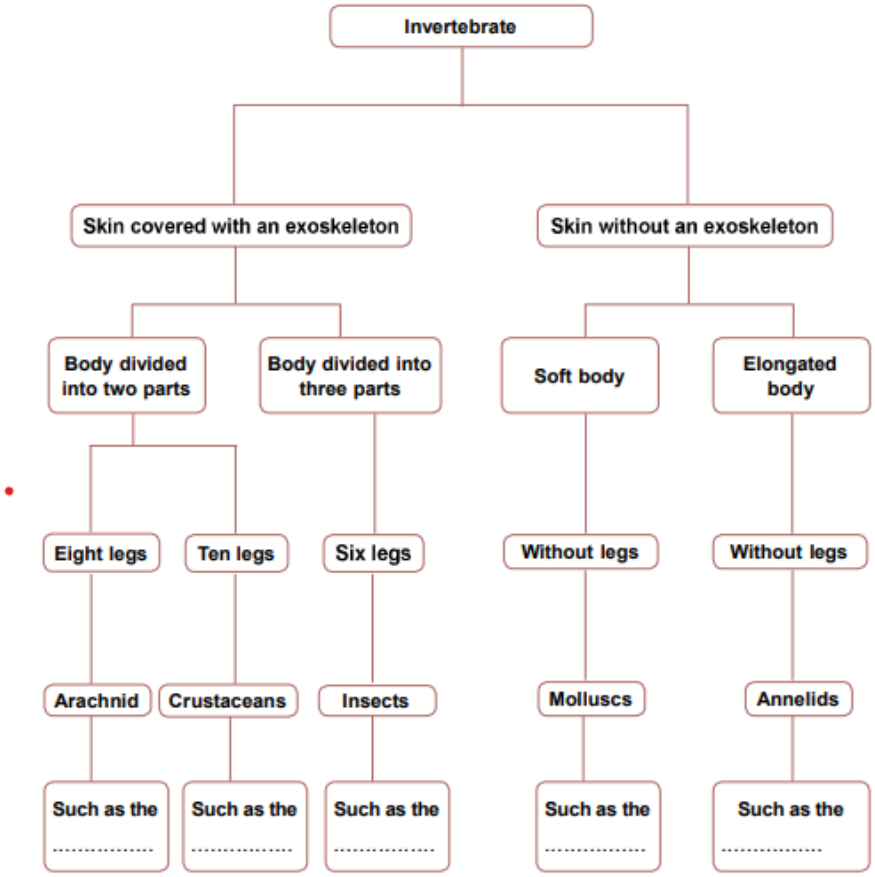
The body is divided into: ……. Parts.

Number of legs: ……

Worksheet (11)

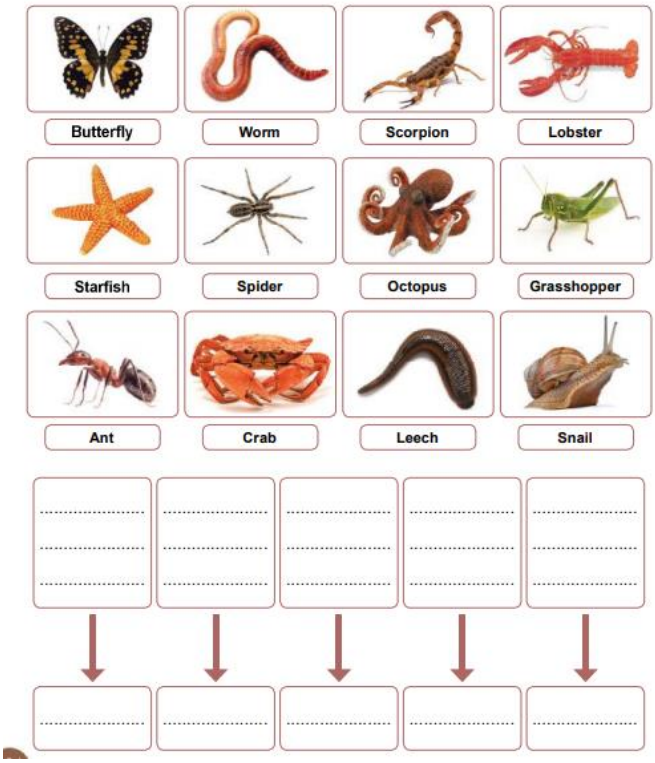
Classification of animals

1. Indicate the names of five subgroups by filling the tree with the name of the animal corresponding to each subgroup.
2. Write the names of the subgroups of invertebrates.

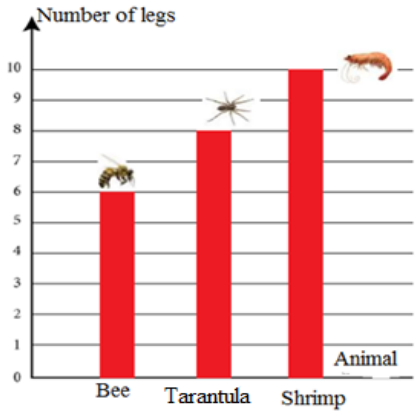


Worksheet (12)

1. Classify the animals in the sets below according to the subgroup it belongs to, and then give a title to each set.



The following bar graph shows the number of legs in some invertebrate animals.



1. Transform the above bar-graph into a table.

Animal			
Number of legs			

2. Compare the number of legs of these animals.

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

3. Based on the number of legs, draw out a conclusion concerning the subgroup to which each of the above animals belongs.

.....
.....

Worksheet (13)
Assessment (4)

Observe the two pictures, then answer:

Earthworm

Slug

1. Compare between slug and earthworm.
   .....
   .....
   .....
2. Are slug and earthworm vertebrates or invertebrates?
   .....
   .....
   .....
3. Determine the group to which each of the following belongs:
   Earthworm: .....
   .....
   .....
   Slug: .....

.....

.....

Worksheet (14)

Final Evaluation

Question1: Choose the correct answer:

1. The outer body cover of invertebrates is called:
   a. Vertebral column b. Bones c. Exoskeleton
2. Birds are reproduced by:
   a. Laying eggs b. giving birth c. by insects
3. Animals that live part of their life in water and part on land are called:
   a. Amphibians b. Reptiles c. Fish
4. ..... are invertebrates.
   a. Birds b. Worms c. Mammals
5. Animals that lack a vertebral column:
   a. Invertebrates b. Vertebrates c. Mammals

Question 2: Fill in the blanks with the appropriate words:

1. The vertebral column is made up of .....
2. ..... are vertebrates whose skin is covered with joined scales.
3. Vertebrates that have hair or fur, do not hatch eggs and give birth are called .....
4. ..... are vertebrates that have beaks and their body is covered with feathers.
5. Animals that have a vertebral column are called .....

Worksheet 1

Learning Table

Topic: Plants Classification.

K	W	L
What do you know about plants classification?	What do you want to know about plants classification?	What did you learn about plants classification?
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
		

Worksheet 2

Diagnostic Assessment

Indicate by true or false:

No.	Statement	True	False
1	All plants contain conducting vessels.		
2	Algae are considered as plants.		
3	Non-flowering plants are divided into monocotyledons and dicotyledons.		
4	The pine trees are non-flowering plants.		
5	Flowering plants seeds are found inside the fruit.		
6	Vascular plants are called so due to the presence of conducting vessels.		
7	Plants are classified according to their size.		
8	The leaves of dicotyledon plants are long and have parallel veins.		

Worksheet 3

Match

Elongated leaves with parallel veins

Dicotyledons seeds

Round leaves with reticular veins

Monocotyledon seeds

Worksheet 4

Compare between cultivated plants and wild plants and give an example for each:

Cultivated plants	Wild plants
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
	

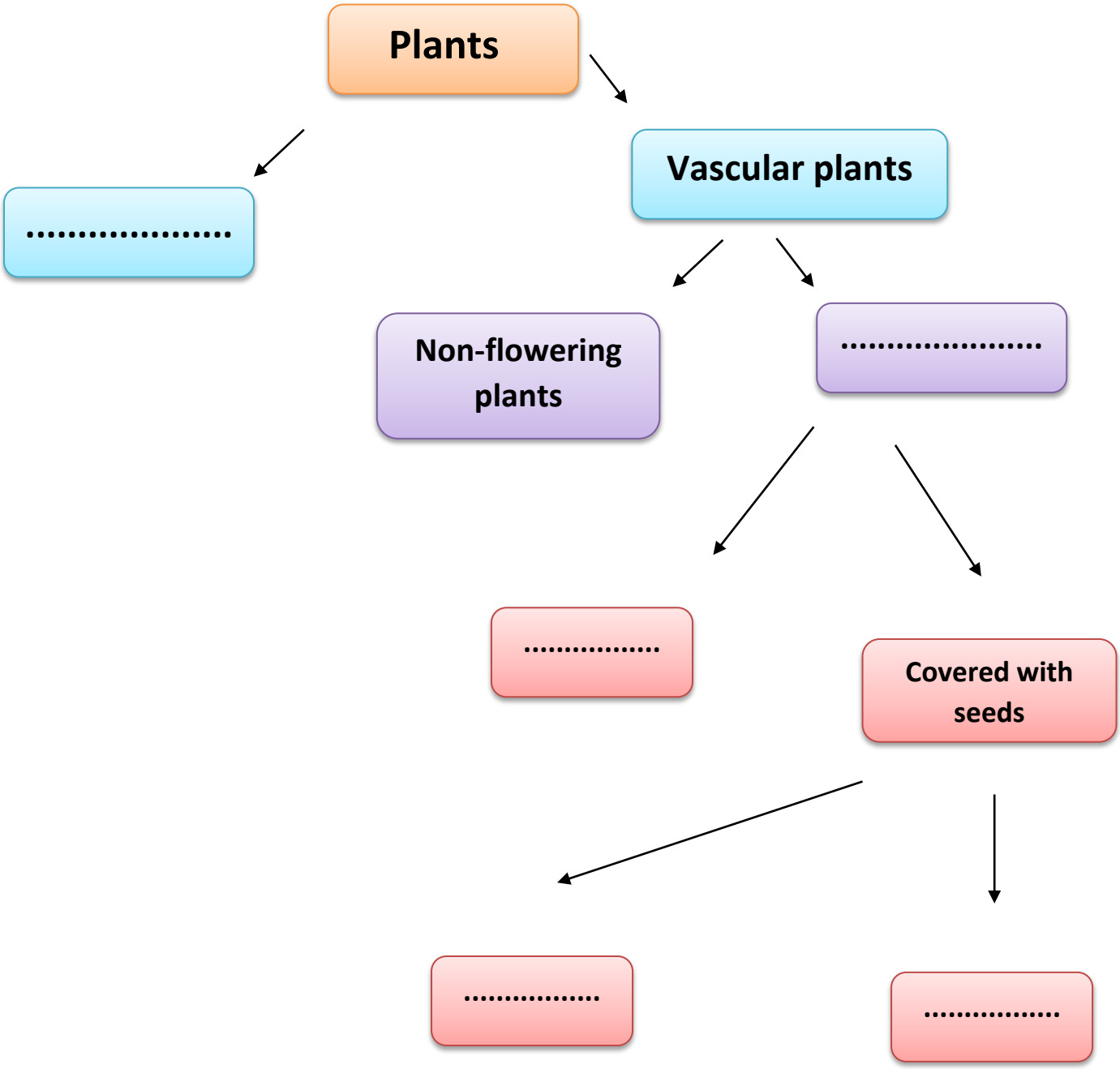
Worksheet 5

Compare between trees, shrubs and herbs.

Trees	Shrubs	Herbs
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
		

Worksheet 6

Complete the following concept map:

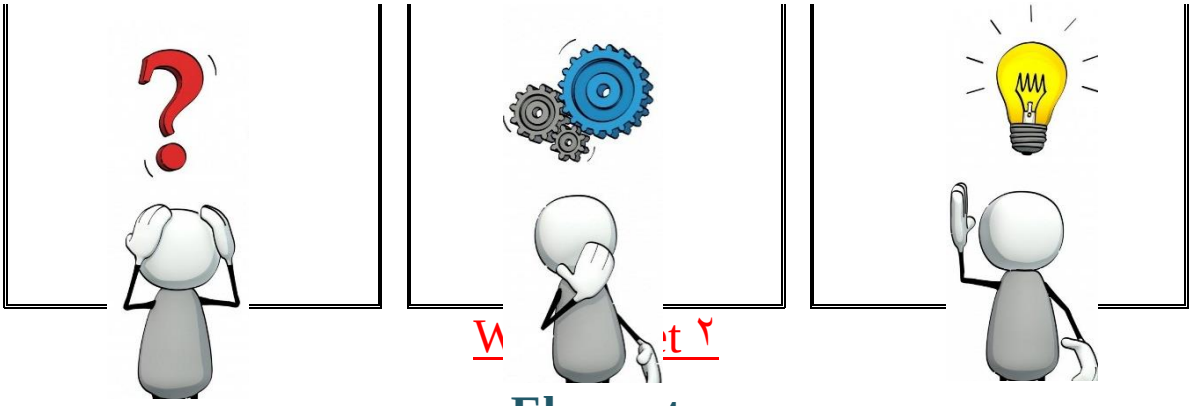

Plants
.....
Vascular plants
Non-flowering plants
.....
.....
Covered with seeds
.....
.....

Worksheet 1

KWL-Table

Topic: Types of Matter

K What do you know about matter?	W What do you want to know about matter?	L What did you learn about matter?

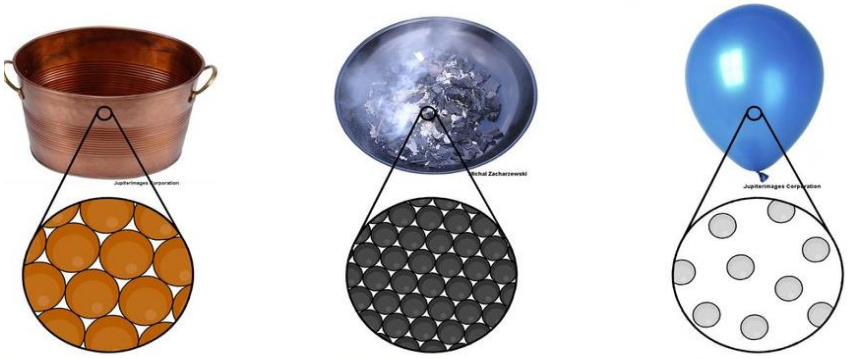


W t ٢

Element

Procedure:

- Observe the following materials: copper, carbon and helium.



- Describe the physical properties of each.
- Describe the atomic structure of each, then compare the atomic structure of the three materials.

What do you observe?

- The properties of the materials are (same-different).
- The atoms of the same material are (same-different).
- The atoms of the different materials are (same-different).
- Can these materials be separated into simpler form?

What do you conclude?

.....
.....

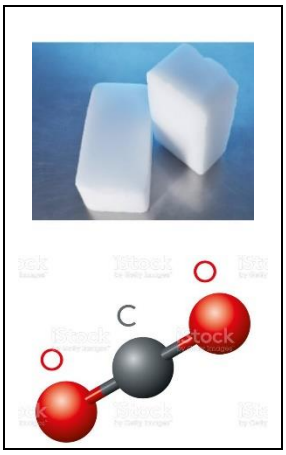
.....
.....

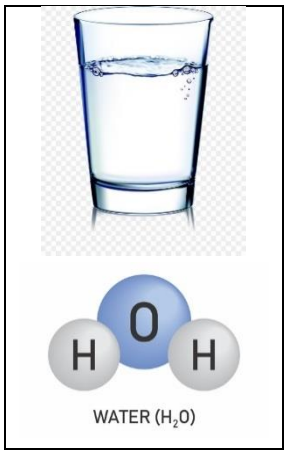
Worksheet ٣

Compound

Procedure:

- Observe the following substances: water, table salt, ice cube.



- Describe the physical properties of each substance.
- Describe the molecular structure of each substance, then compare between them.

What do you observe?

- The properties of the materials are (same-different)
- The molecules of each material are (same-different)
- The molecules of different materials are (same-different)

- The atoms of the molecules are (same-different)
- Can these substances be separated into simpler substances?

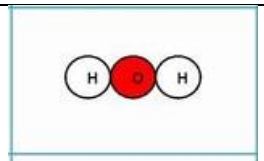
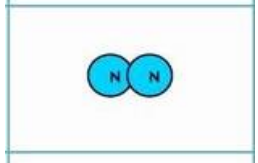
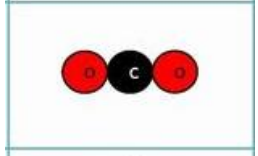
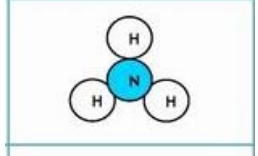
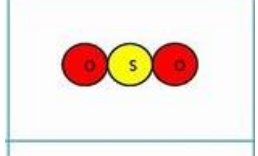
What do you conclude?

- .....
- .....

Worksheet 4

Element or Compound

Indicate the type of these materials.

Substance		Type	
		Element	Compound
Water		.....	.....
Nitrogen		.....	.....
Carbon dioxide		.....	.....
Ammonia		.....	.....
Sulfur dioxide		.....	.....

Hydrogen gas		.....	.....
Hydrochloric acid		.....	.....
Oxygen gas		.....	.....

Worksheet 5

Formation of Mixture

Three groups of different materials are in the following table. Can you form mixtures (one material is chosen from each group)?

No	1st group	2nd group	3rd group
1	Orange	Sand	Yogurt
2	Banana	Cucumber	Cumin
3	Cement	Pepper	Water
4	Salt	Sugar	Tomato

- Choose a component from each group.
- Complete the table by daily used mixtures.

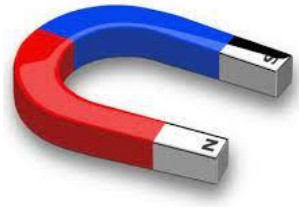
No	**mixture**	**Component**		
1	1st mixture	.....	.....	.....

2	2nd mixture	.....	.....	.....
3	3rd mixture	.....	.....	.....
4	4th mixture	.....	.....	.....

Worksheet 6

Mixture Properties

Procedure:



- Put a small amount of salt in a glass with little amount of water then stir, what will happen to the salt particles?
- Repeat the previous step with iron filings. What will happen to the iron filings?
- Mix table salt with iron filings on a white paper.
- Using magnifier, observe the mixture very well. Can you distinguish the salt particles?
- Introduce a magnet in the plastic bag with the mixture. What do you observe?
- Put a quantity of water in the glass, then add a small amount of the mixture while stirring by a glass rod.

Observation

.....

.....

What do you conclude?

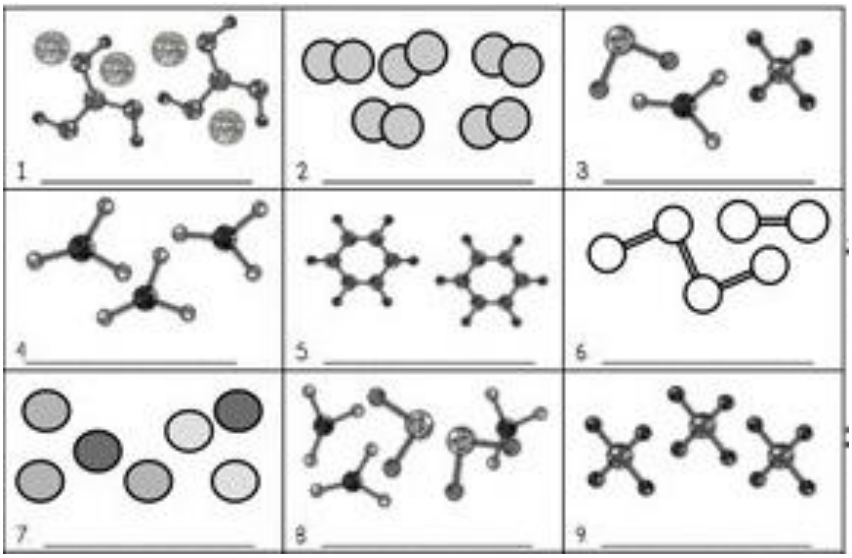
.....

.....

Worksheet ٧

Pure Substances and Mixture

Classify the following materials into pure substance and mixture:



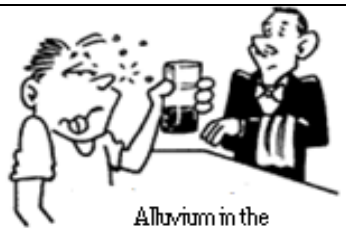
Worksheet 8

Separation of Mixture

Solve the following problems.

Glass cup – plastic funnel – flame – strong magnet – filter paper – glass rod.

Problem	Components of mixture and its type	Steps and used tools
 Glass pieces in the soup		

 Alluvium in the drinking water		
 Iron filling in the flour		

Worksheet 9

Physical Shape for Materials

Follow your teacher's steps.





What do you observe?

Write the notes in the following table:

Substance	Appearance	Flexibility	Malleability	Conductivity of heat	Conductivity of electricity
Iron	.....	.....	.....	.....	.....
Aluminum	.....	.....	.....	.....	.....
Copper wire	.....	.....	.....	.....	.....
Phosphorus	.....	.....	.....	.....	.....
Carbon	.....	.....	.....	.....	.....
Sulfur	.....	.....	.....	.....	.....

What do you conclude?

.....

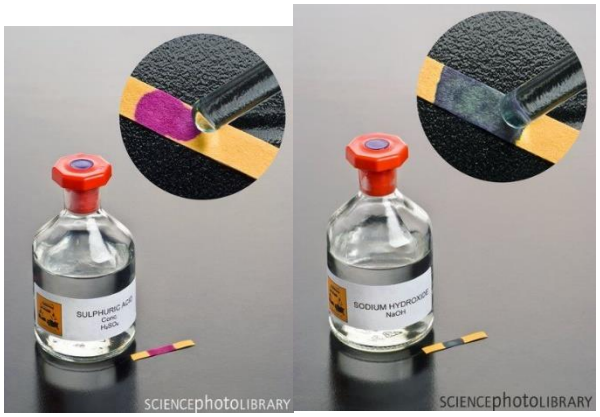
.....

.....

Worksheet 10

Acids and Bases

Procedure:



- Put one drop of each liquid on the red and then on blue litmus paper.
- Put an amount of baking powder on each solution, what do you observe?

- Rub between your index and thumb a drop of each liquid, then watch your hands after each time. What do you observe?

What do you observe?

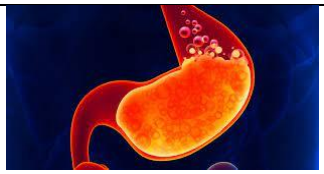
Experiment	Acid	Lemon juice	Potassium hydroxide	Sodium hydroxide
Effects on the red litmus paper	.....	.....	.....	.....
Effects on the Blue litmus paper	.....	.....	.....	.....
Interaction with baking powder	.....	.....	.....	.....
Texture	.....	.....	.....	.....

What do you conclude?

.....
..... .

Slide 1

Uses of Acids and Bases in Daily Life

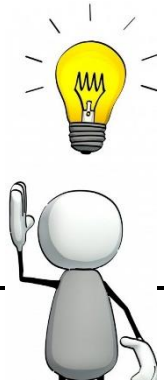
Uses	Acids	Bases
Human body	Acids in stomach help in digestion of food, and it forms in the muscles during exercises. 	Oral saliva consists of a foamy alkaline substance secreted by several glands surrounding the mouth. 

Food	Many foods contain useful and necessary acids for humans, and these foods include: lemons, oranges, tomatoes, vegetable leaves, and apples. 	Baking powder is used in making cakes. 
Medicine	Used for making the medicine like: Aspirin, vitamin C 	Used to make anti-acids medicine 
House	Dilute acids are used to clean surfaces and polish the surfaces of metals to be painted 	Used to clean surface and open clogged sink drains. 
Industry	Used in the manufacture of car batteries, agricultural fertilizers, synthetic fibers, and explosives 	Used in making soap, fabric paper, cement 

Worksheet (1)

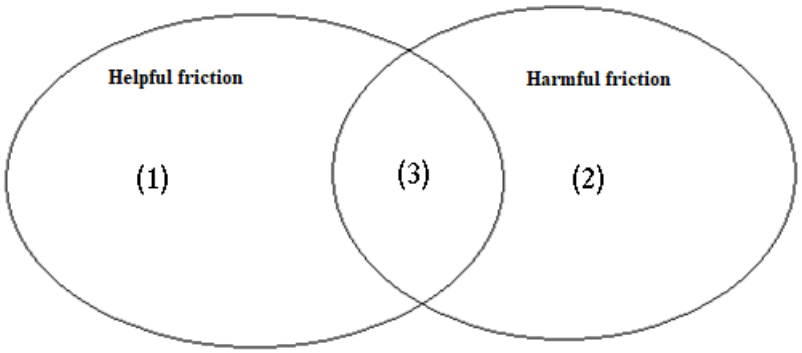
Learning Table

Topic: Friction and Machines

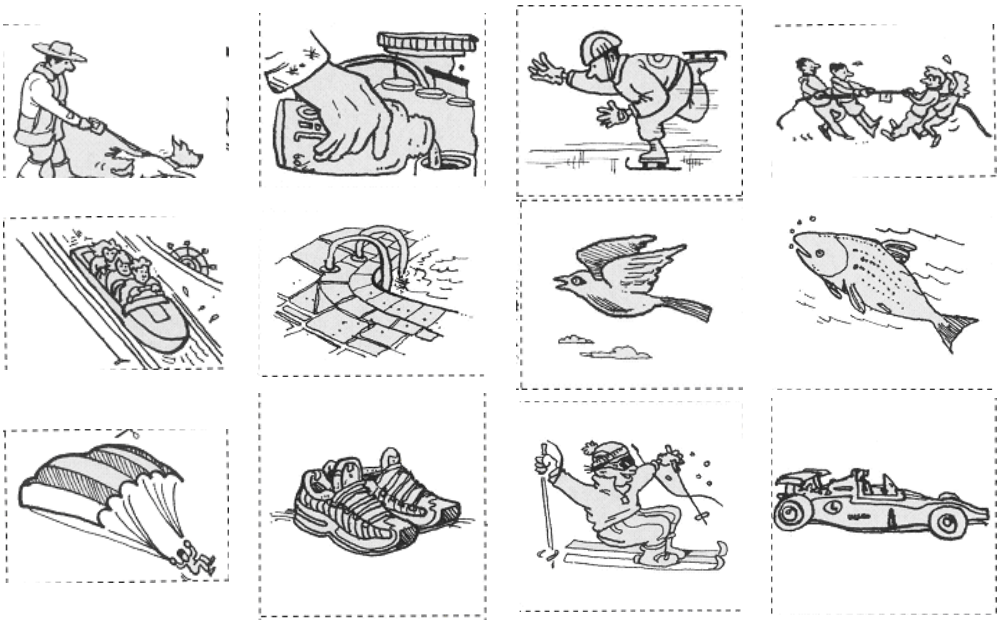
K	W	L
What do you know about friction and machines?	**What do you want to know about friction and machines?**	**What did you learn about friction and machines?**
		

Worksheet (2

Types of Friction



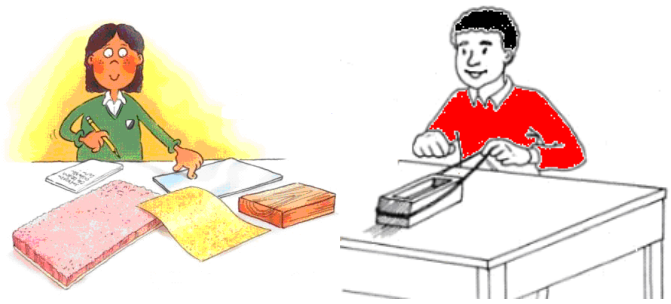
Observe the following picture then write for each picture number (1) or (2) or (3) according to its type:



Worksheet (3)

Friction Force

Procedure:



- Pass your finger back and forth over a piece of wool, a piece of carpet, a plastic bag, a piece of ceramic, a piece of wood, a piece of paper.
- Attach the bricks to the rubber string and slide them over each of the previous surfaces.
- Measure the length of the rubber string needed to move the bricks over each surface.

What do you observe?

Surface	Description of surface	The length of the rubber string when moving one template
Wool		
Carpet		
Plastic		
Wood		
Ceramic		

What do you conclude?

.....

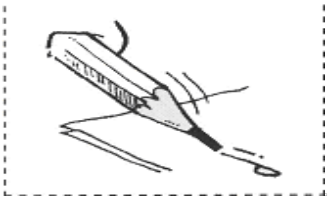
.....

Slide (1)

Friction Force

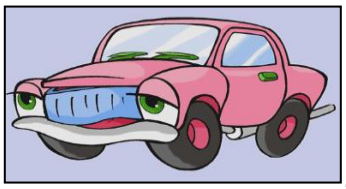
Friction between chalk and blackboard that helps students to write

Friction between eraser and notebook that helps to erase mistakes



Friction between pencil and paper that helps to write.

Friction between thrown ball and playing court that causes it to stop after a time.



Friction between tire and road that helps the car to move and stop

Friction between toothbrush and teeth that helps remove food debris from mouth.

Friction between boat and water that impedes its movement

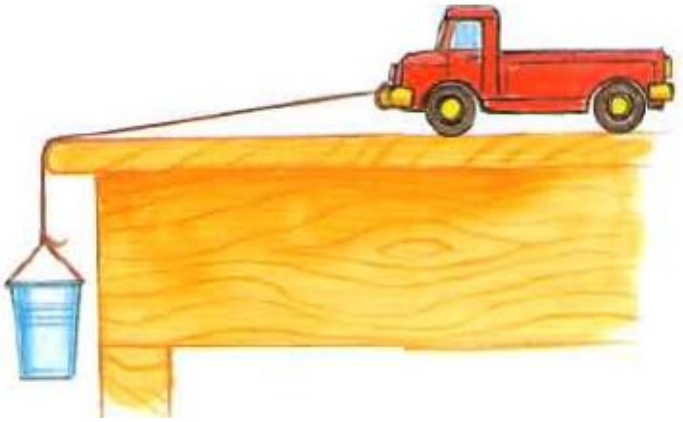
Friction between parachute and air that reduces speed of athlete during a fall

Friction between rock and ground that impedes its movement

Worksheet (4)

Friction force

Procedure:



- Connect a string at the end of a car, then connect the other end to the plastic cup as shown in the figure.
- Put the car on a wooden table so that the string hangs over the cup, as in the figure.
- Start putting some weight in the cup until the car starts moving.
- Put an apple in the box of the car.
- Observe whether the car moves with the same amount of stationery or does the cup weight needs to be increased?

What do you observe?

.....

.....

What do you conclude?

.....

.....

Worksheet (5)

Good and Bad Effects of Frictional Forces

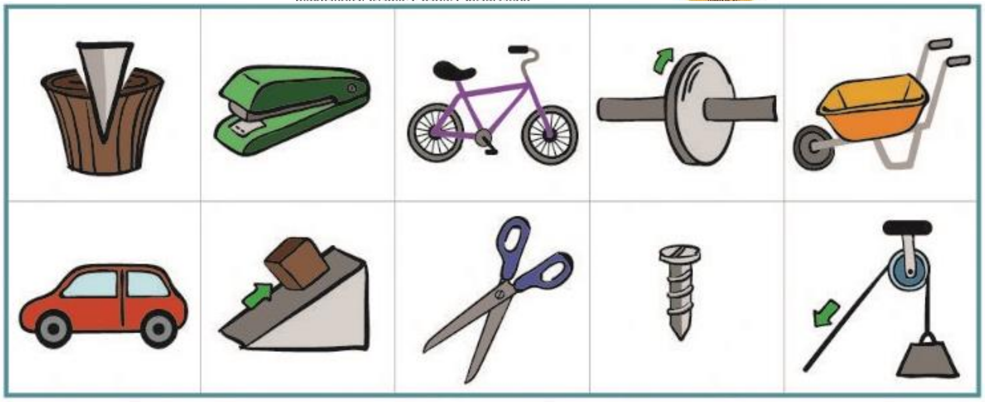
Explain the action that follows each picture, then indicate what happens if these actions do not exist:

Picture	Action	Explain	The action don't exist
	Put wheels for bags	....	....
	Apply oil to car engine	....	....
	Put a rubber band on the stairs	....	....
	Put iron chains on the wheels of car in snowy areas	....	....

Worksheet 5

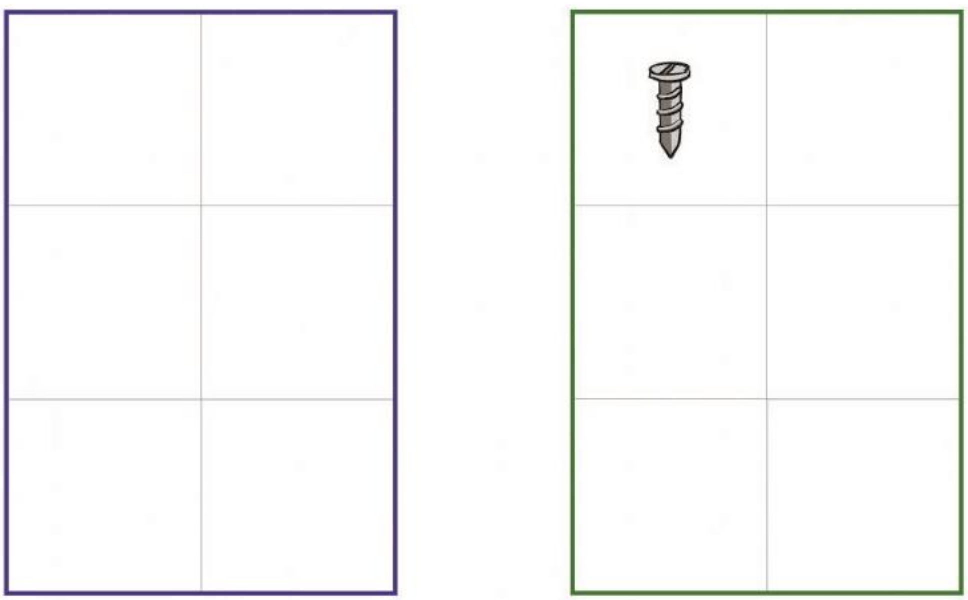
Machines

Observe the pictures that represent machines, then classify them into simple and complex machines:



Complex Machines

Simple machine

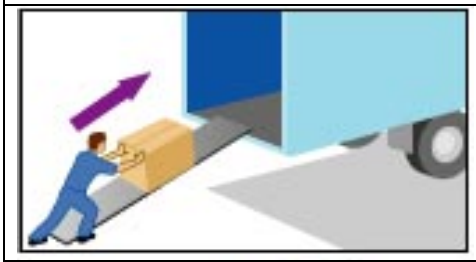


Worksheet 6

Simple Machines in our Life

Procedure:

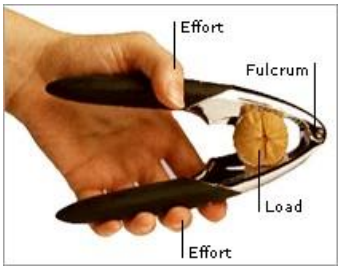
[illegible]

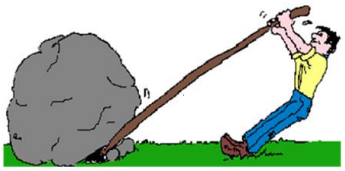
	
Name of machine	Name of machine .....
Use:	Use: .....
	
Name of machine	Name of machine .....
Use:	Use: .....
	
Name of machine	Name of machine .....
Use:	Use: .....

Worksheet 8

Levers

Observe the following simple machines, then indicate the similarities and differences between them.





What do you observe?

.....

.....

What do you conclude?

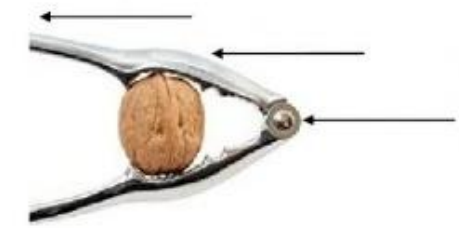
.....

.....

Worksheet 9

Effort, Load, and Fulcrum

Label the effort, load, and fulcrum in each picture



Worksheet (10)

Levers & Human Effort

Procedure

- Use a hammer to put two nails (7 cm) in the middle of a piece of wood
- Try to remove one of them with your hand
- Use the pliers to remove the other one
- Note the required effort in this task as well as the effort involved in each case.
- What do you observe?

....

....

- What do you conclude?

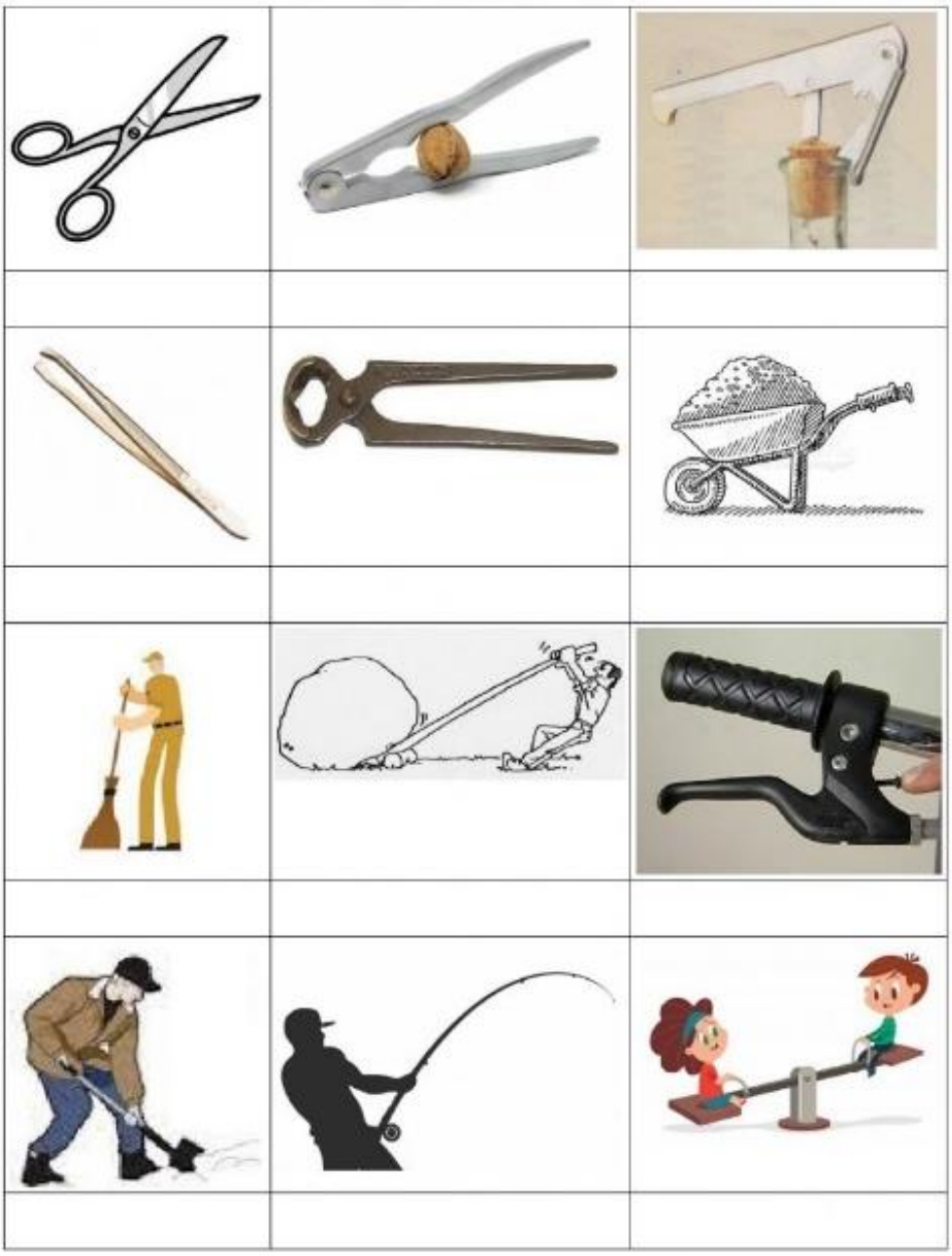
....

....

Worksheet (11)

Levers

Indicate the effort, fulcrum and load according to its classification (1,2 and 3)



Worksheet (12)

Law of Levers

Procedure:

- [illegible]
- [illegible]
- [illegible]
- [illegible]
  1- [illegible]
- 2- [illegible]
- [illegible]

- Your Notes:

.....

.....

- What do you conclude?

.....

.....

Final Evaluation

Good or Bad

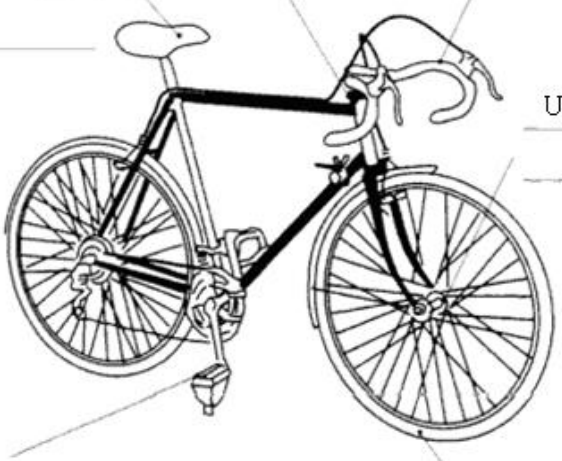
Complete the figure using one of the following statements:

- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

Undesirable Friction

Desirable Friction

Desirable Friction



Undesirable Friction

Desirable Friction

Desirable Friction

Slide 1

Learning Table

Name: **Class:**

Topic:

What do you know about Wave motion? (K)	What do you want to learn about Wave motion? (W)	What did you learn about wave motion? (L)
		

Worksheet 1

Classify the following pictures according to their motion into oscillatory and wave motion.

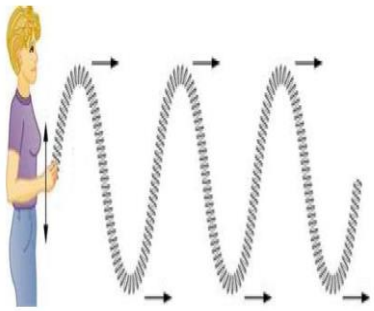
.....

.....

.....

.....

.....



.....

Worksheet 2

Classify the following pictures according to their waves into mechanical and electromagnetic waves.

....

....

....

Side 2

Diagnostic Assessment

Indicate by true or false:

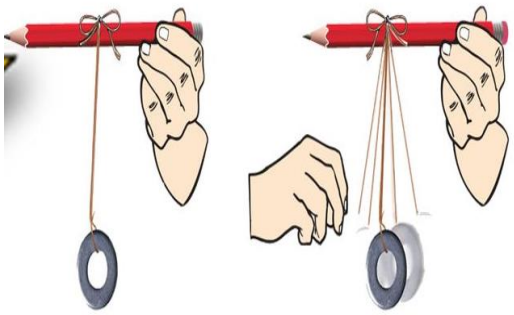
No	Phrase	True	False
١	Sound is an example of electromagnetic waves.		
٢	The movement of the rope represents an electromagnetic wave.		
٣	Microwaves are example of mechanical waves.		
٤	The motion of a pendulum represents the wave motion.		
٥	Tsunami waves are an example of oscillatory motion.		
٦	Sound and light waves need a medium to travel.		
٧	Sound travels through air only.		
٨	Waves are produced by sound originating from different sources.		
٩	The speed of sound depends on its frequency.		
١٠	Light is an example of mechanical waves.		
١١	Spring motion is an example of wave motion.		
١٢	Sound causes the particles to move in the medium during its transmission.		

Worksheet 3

Oscillatory Motion

Do the following activity with your classmates to understand the concept of Oscillatory motion:

- Prepare the following tools: a pen, a string of 30 cm long, a coin (25 piasters)
- Make a simple pendulum by threading one end of the string into the middle of the pen and the other end to the coin.
- Hold the pen with the left hand, and pull the coin to the right, as shown in the figure.



- What do you observe about the coin which is the vibrating body?

  .....

- At what position is the body's speed the greatest? And when does it decrease?

  .....

- What do you conclude?

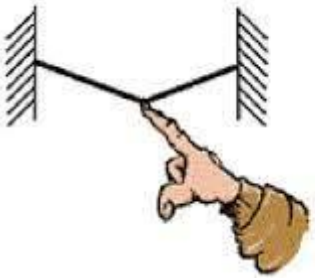
  Oscillatory motion is: .....

Worksheet 4

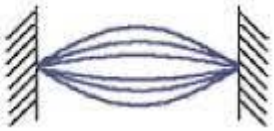
Put (√) on the pictures that show the Oscillatory motion.

( )

( )



( )



( )

( )

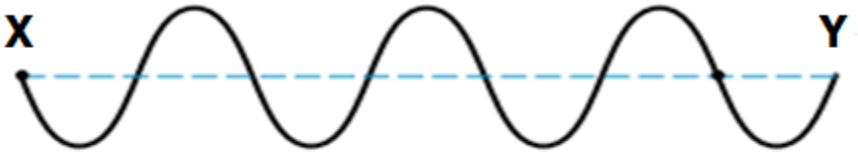
( )

( )

( )

Worksheet 5

According to your acquired knowledge, answer the following exercise:



Oscillatory motion (1)

Oscillatory motion (2)

- In which curve is the amplitude of oscillation greater: (1) or (2)?

  .....

- How many completed oscillations between points x and y are in each curve?

  .....

- What is the amplitude of oscillation in each curve?

  .....

Worksheet 6

According to your acquired knowledge, solve with your classmates the following activity:

1- A pendulum makes 50 complete vibrations in 10 seconds, what is the frequency of the pendulum? What is the value of the period of the pendulum?

Frequency = ...

Period = ...

2- Calculate the period and the frequency of a body that makes 300 complete vibrations in 60 seconds?

Frequency =.....

Period = ...

Worksheet 7

Do the following activity using a game of dominoes and share your observations with your teacher and classmates:

- Put the dominoes in a row so that the distances between them are equal as in the opposite figure.

- What will happen when you push the first domino?

  .....

- Do dominoes change positions after falling?

  .....

- Explain the results

  .....

Worksheet 8

Describe the direction of wave propagation (Coils of the spring) and the direction of vibration of the particles of the medium (colored ribbon) in the following two cases:

- **First case**

When moving the spring up and down or right and left

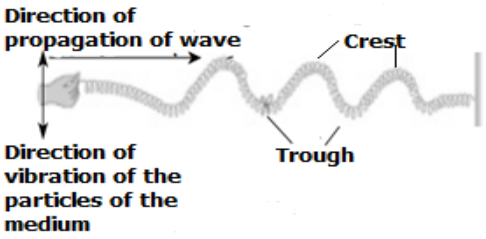


Figure (1)

- **Second case**

When pushing and pulling the spring

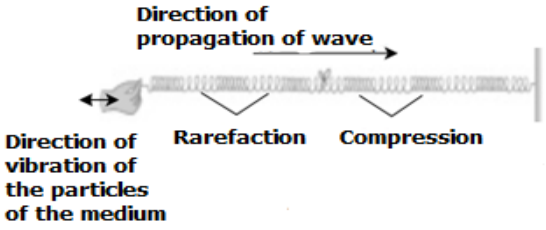


Figure (2)

- Does the position of the coils of the springs change during wave propagation in both cases?.....
- In which case:
- The coils go up and down, forming crests and troughs, respectively?.....
- The coils converge and diverge, forming compressions and rarefactions, respectively? .....

Compare between longitudinal and transverse waves.

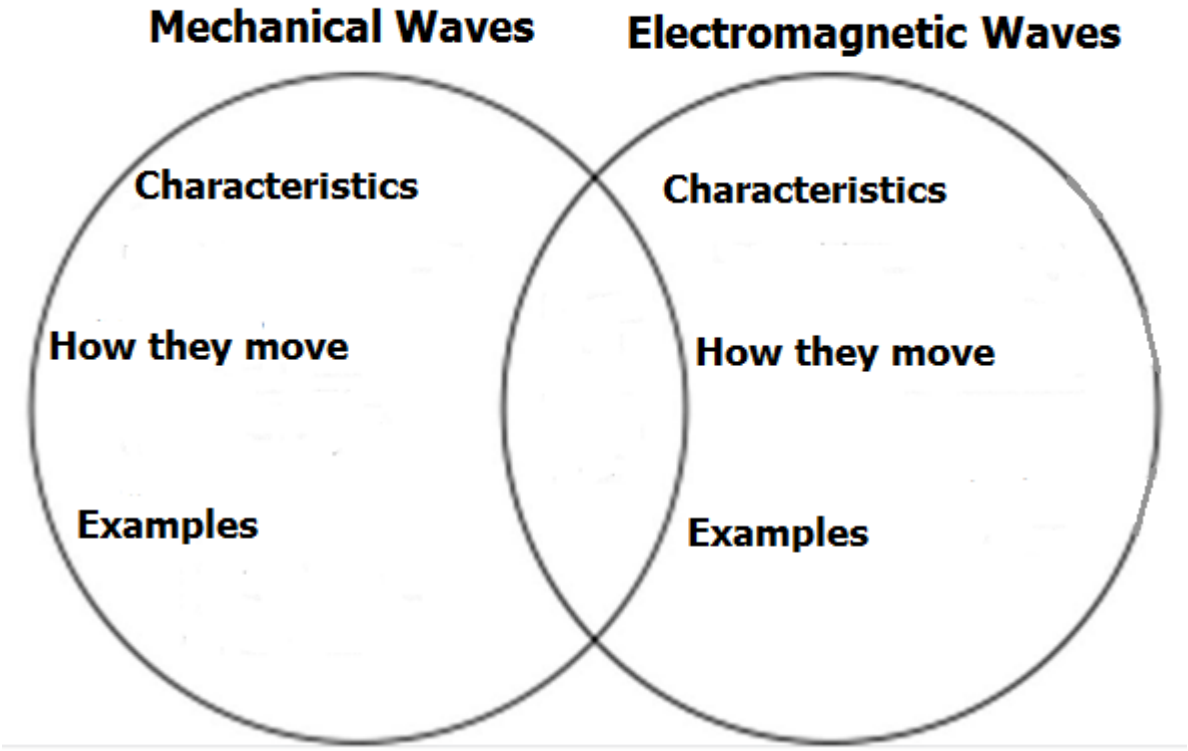
	Longitudinal Waves	Transverse Waves

1- Definition **2- Composition**		

Worksheet 9

Complete the following Venn Diagram

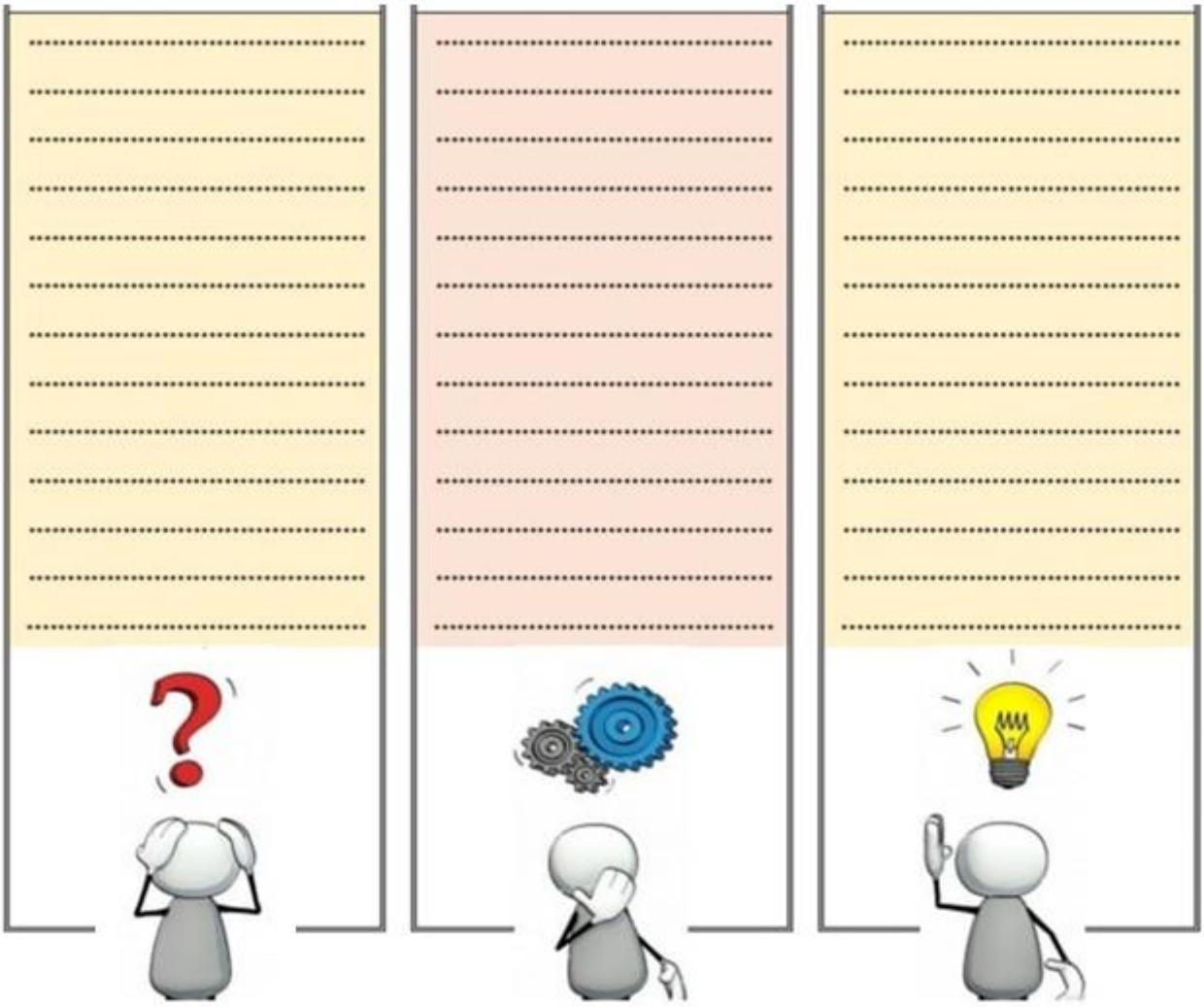
(It requires a medium to travel –All are transverse –It travels through a vacuum –It can be longitudinal or transverse –Sound waves –Light waves –Radio waves –Water waves –Waves of mobile –Radar waves –Waves of plucking guitar string –Microwaves)


Mechanical Waves
Electromagnetic Waves
Characteristics
How they move
Examples
Characteristics
How they move
Examples

Slide 1

Learning Table

What do you know about the Methods of Heat Transfer? (K)	What do you want to know about the Methods of Heat Transfer? (W)	What did you learn about the Methods of Heat Transfer? (L)



Slide 2

Diagnostic Assessment

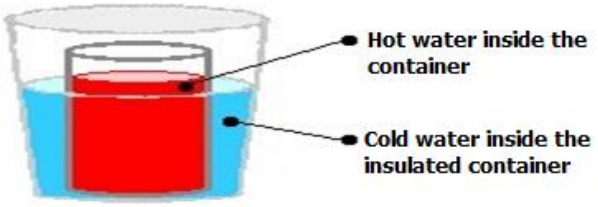
Indicate by true or false:

No	Phrase	True	False
١	Upon contact, all the heat of the hot body is transferred to the cold body without any loss.		
٢	All solid objects conduct heat.		
٣	Solids and liquids have equal speed of heat conduction.		
٤	Heat is transferred in solid materials by convection and radiation.		
٥	Heat is transferred in liquids by conduction.		
٦	Natural convection and Forced convection are not different.		
٧	There is no relationship between the density of materials and the transfer of heat in them.		
٨	Heat is transmitted only in the presence of a medium.		
٩	The sun's heat can be transmitted to us by conduction or convection.		
١٠	Light bulbs, microwaves, and heaters transmit heat by conduction because they are solid materials.		
١١	The Tidal phenomenon has no relationship with heat transfer.		

Worksheet 1

Thermal Equilibrium

Predict what will happen to the container that contains hot water and the container that contains cold water.



……

……

……

Can both reach to equal temperature?

……

……

Draw the correct pathway through which the heat transfer will occur. Explain

……

……

٢- Given a cup of hot tea, predict what will happen when you put ice cubes inside this hot tea.

.....

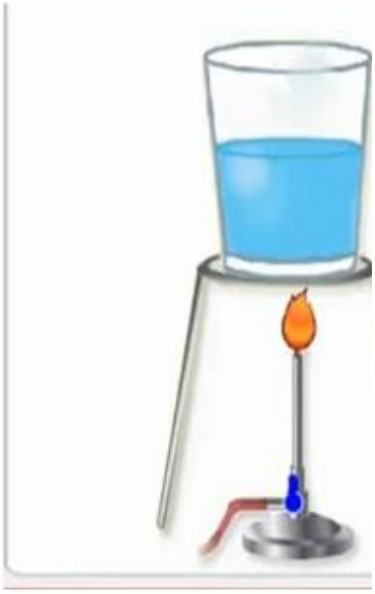
.....

.....

Worksheet 2

Thermal Conductivity of Solids

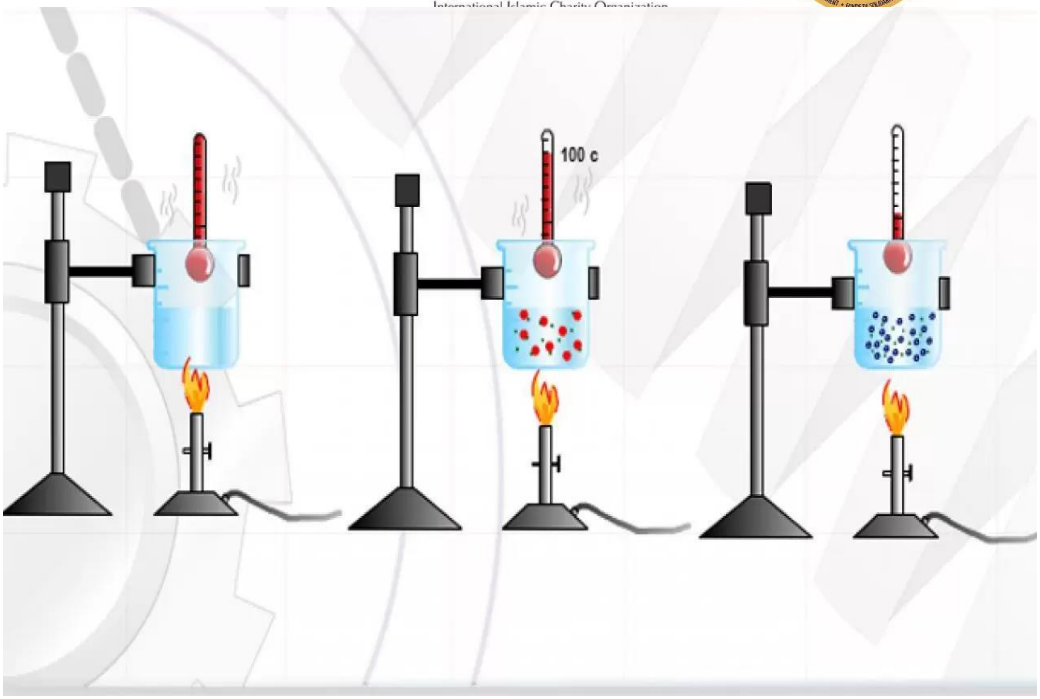
Predict what will happen to each rod when you put it in hot water



- **Iron rod :**.....
- **Plastic rod:** .....
- **Wood rod :** .....
- **Aluminum rod:** .....

Worksheet 3
Convection

Dear student, below is a figure that shows how water is heated, the changes that occurred to it during heating, and how heat transfers between water molecules.



Using the above figure and the experiment about convection, describe what happens to the water molecules.

……

……

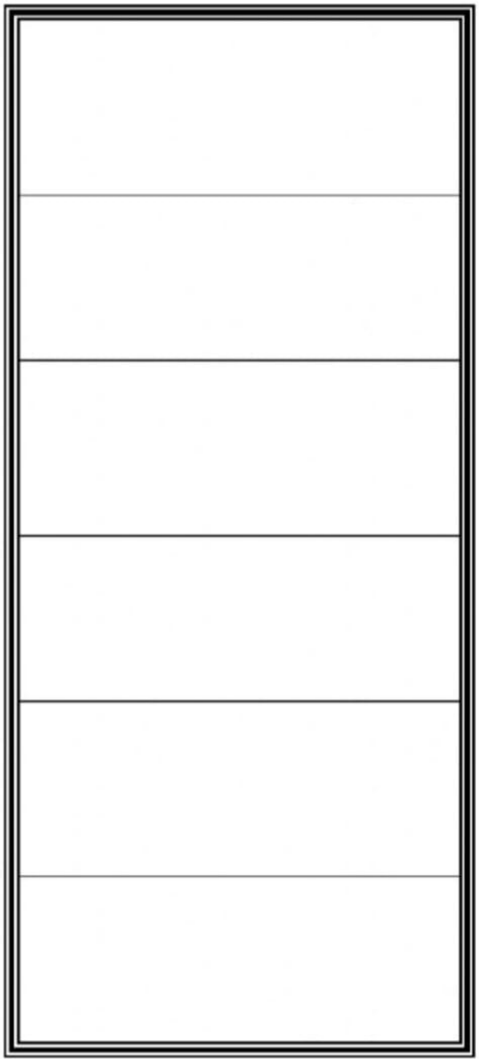
……

……

Worksheet 4

Types of Convection

Indicate the type of convection that occurs in each of the following:(Natural convection – Forced convection)



Use of the air conditioner to cool the house

Heating water in seas and waterbodies

Use of coolant for the car motor

The Electric fan

Heating a pot of water on the fire

The movement of heat from inside the sun to outside

Worksheet 5

Methods of Heat Transfer

Indicate the method of heat transfer in each picture:

Wear kitchen gloves when taking out the food from the oven 	Heating marshmallows over a charcoal fire 	The sun evaporates water 
Hot air fills the balloon 	The heat from the table absorbs the energy from the ice cube 	The heat in the horseshoe is transferred from the oven 
Put the pot on the cooker 	The food bowl is on the table 	Heating water 
Feeling the spoon's heat after putting it in the soup 	Transferred heat inside the microwave 	Infrared temperature sensor 

Worksheet 6

Home Appliances

Dear student, through the video that your teacher showed you about heat transfer in some home appliances, use the picture below to show the movement of air in each of the air conditioner and heater.

Predict why the air conditioner is placed at the top of the room, while it is preferable to place the heater at the bottom of the room, and the freezer of the refrigerator is at the top of the refrigerator.

.....

.....

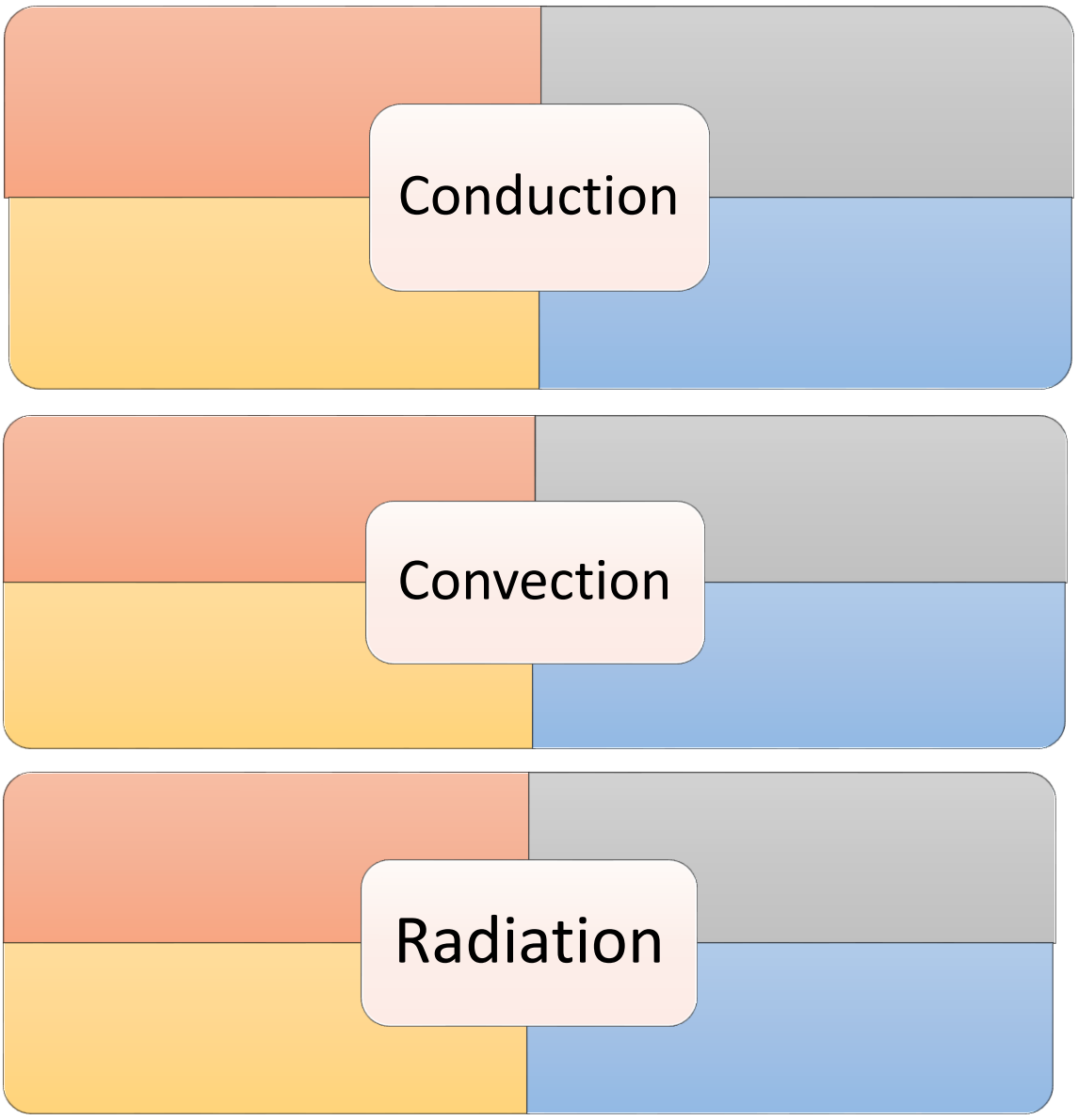
.....

.....

Worksheet 7

Heat Transfer Methods in Daily Life

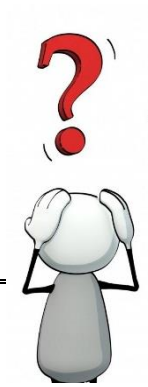
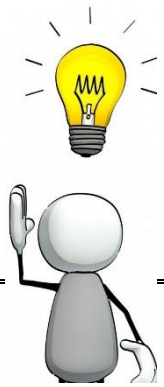
According to your acquired knowledge about the methods of heat transfer, write applications and examples from daily life in your environment for each of these methods.



Slide 1

Learning Table

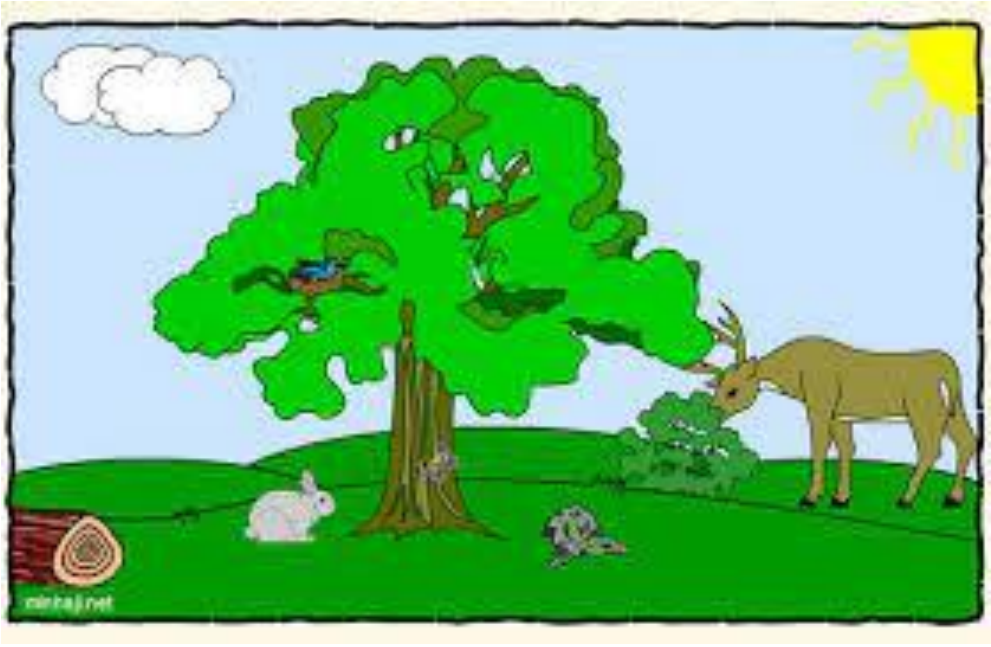
Topic: Biomes

K What do you know about biomes?	W What do you want to know about biomes?	L What did you learn about biomes?
		

Worksheet 1

Ecosystem

Indicate the living and non-living things of the ecosystem.



Living things	Non-living things

Slide 2

Diagnostic Assessment

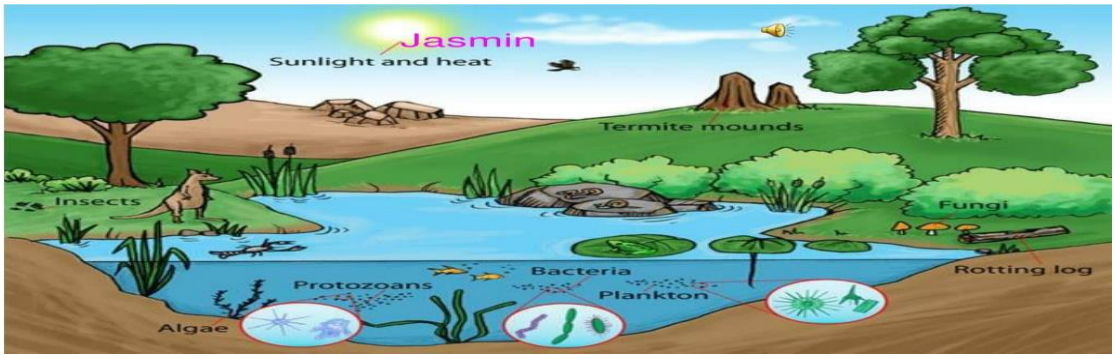
Indicate by true or false:

No.	Statement	True	False
1	Moderate usage of water by me ensures its continuity and flow.		
2	Encouragement for conservation of water resources via media is important.		
3	Conservation of water resources is due to the plenty consummation of it.		
4	Ecosystems exist only on land.		
5	Ecosystems consist of living things and do not contain non-living things.		
6	Soil is part of ecosystems.		
7	In ecosystems, there is no relationship between living and non-living things.		

Worksheet 2

Ecosystem

Observe the figure, and answer the following questions.



1. Name the living things in the picture.

2. Define ecosystem.

3. Choose the correct answer.

The ecosystem represents the relationship between:

A- Living things in a specific area of the environment.

B- Non-living things in a specific area of the environment.

C- Living things and non-living things in a specific area of the environment.

Worksheet 3

Ecosystem

Observe the picture and then complete the following diagram with the appropriate words:

Animals	Plants	Algae	Sun
Air	Meteors	Asteroids	Insects

Definition

.....

.....

.....

.....

Properties

.....

.....

.....

.....

Ecosystem

Examples

.....

.....

.....

.....

Examples

.....

.....

.....

.....

Worksheet 4

Freshwater Ecosystem

Answer the following questions:

1. **Mention the important characteristics of fresh water.**

2. **The number of types of fresh water.**

3. **Explain the importance of water surface to the environment.**

4. **What happens to the vital system in fresh water in case of the disappearance of plankton?**

Worksheet 5

Changes in Ecosystems

Answer the following questions:

1. **What are the causes of changes in the ecosystem?**

2. **How do we protect the ecosystem?**

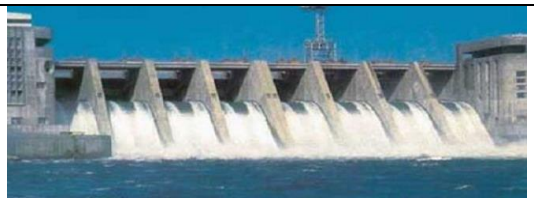
3. **What will happen when an ecosystem changes?**

Slide 3

Natural Resources

 Metals	 Sun
 Wood	 Water
 **Petroleum**	 **Charcoal**

Natural Resources

 Metals	 Sun
 Wood	 Water
 **Petroleum**	 **Charcoal**
 **Water**	 **Gas**
 **Fishes**	 **Wind**
 **Trees**	 **Farmland**

Worksheet 6

Protection of Natural Resources

Define each method of protecting natural resources, and give an example.

1. **Rationalization of consumption:**

2. **Reuse:**

3. **Recycling:**

Worksheet 7

Pollution

Solve the worksheet using the following website.

Assignment 1

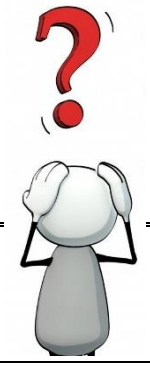
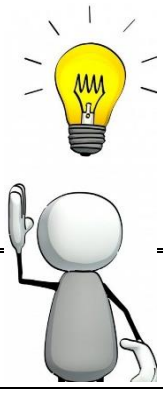
Pollution

Solve the worksheet using the following website.

Worksheet 1

Learning Table

Topic: Atmospheric Air

K What do you know about atmospheric air?	W What do you want to know about atmospheric air?	L What did you learn about atmospheric air?
		

Worksheet 2

Diagnostic Assessment

Indicate by true or false:

No.	Statement	True	False
1	Atmospheric air is a compound not a gas.		
2	Air and oxygen are the same, air is necessary for combustion and the humans breathe air.		
3	The percentage of oxygen can be measured through burning candle inside a glass.		
4	Oxygen and hydrogen are two of the most common gases in the atmosphere.		
5	Clouds come from somewhere above the sky.		
6	The sun boils the sea to produce water vapor.		
7	Clouds are made of cotton, wool or smoke.		
8	There are clouds full of water and others are empty filled when they pass over the sea.		
9	Rain falls from pores in the clouds.		

Worksheet 3

Match each phenomenon of bad weather with the suitable figure:

Lightning

Sandstorm

Blizzard

Tornado

Flood

Slide 1

Importance of Atmospheric Air

Observe each of the following pictures, then discuss the importance of air with your classmates and your teacher:

Air is essential for plant photosynthesis.

Air is essential for human and animal respiration.

Air is necessary for birds and some flying insects.

Air is necessary for the combustion process.

Air is needed to fill tires, balloons and soccer balls.

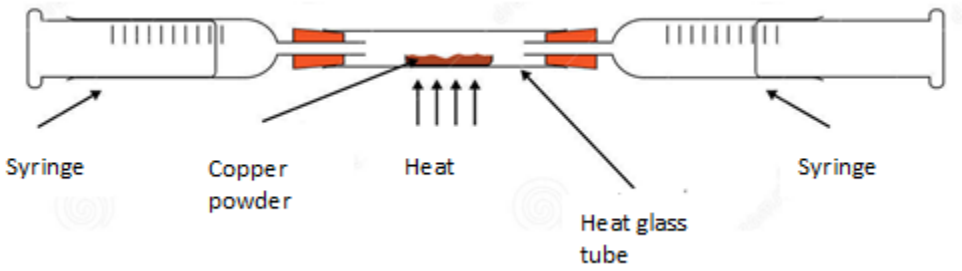
Air is necessary for the movement of some means of transportation such as airplanes and sailing ships.

Worksheet 4

The Percentage of Oxygen in Air

Procedure

1. Fill one syringe with 100 cm^3 of air and leave the other completely empty.
2. Grind the copper powder vigorously with a burner.
3. After the copper glows, air is passed between the two syringes back and forth until all the air comes in contact with the hot copper.



What do you observe?

- The color of copper turns from ..... to ....; Where copper combines with the oxygen in the air to form copper oxide, and thus the air became free of oxygen gas.
- When you read the final volume of air inside the syringe, you will find that it is about .....

What do you conclude?

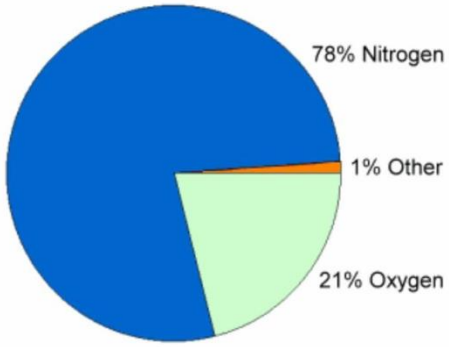
- The percentage of oxygen gas in the atmosphere is.....

Worksheet 5

Atmospheric Air Gases

Observe the following figure and table and then answer the questions:

Gas	Percentage
Nitrogen	78%
Oxygen	21%
Inert gases	0.97%
Carbon dioxide	0.03%



1. Is air an element, a compound, or a mixture?

.....

2. What is the percentage of nitrogen in air?

.....

3. What is the percentage of oxygen in air?

.....

4. What is the percentage of carbon dioxide in air?

.....

5. What is the percentage of other gases in air?

.....

Worksheet 6

Today's Weather

Procedure:

1. Go outside with your classmates in the morning.
2. Record your observations about the weather by answering the following questions:

Is the sky clear, cloudy, or overcast? Is it cold or hot? Is it dry or wet? Is it rainy or sunny? Is the wind calm, moderate or severe?

3. Repeat this in the afternoon and evening periods.

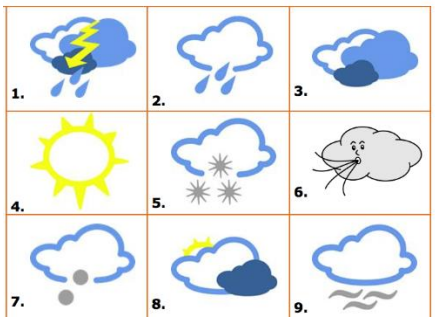
What do you observe?

- Record your observations in the following table, then compare your observations with those of your classmates.

	Morning	Noon	Evening
Conditions of weather	.....	.....	.....
	.....	.....	.....
	.....	.....	.....

What do you conclude?

- Draw a circle around the icon for the weather.



Slide 2

Weather Elements

Wind: is the movement of air over the earth's surface from one place to another.

Temperature: The temperature changes throughout the year from low to high .

Fog: is water droplets suspended in the air, and it occurs as a result of the condensation of water vapor near the surface of the earth.

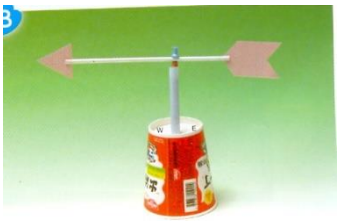
Clouds: consist of water vapor condensed in the upper atmosphere.

Snow: is formed due to the drop of temperature below freezing in the upper layers of the atmosphere where clouds spread.

Rain: consists of condensed water vapor in the upper layers of the atmosphere as a result of a decrease in temperature.

Worksheet 7

Weather Observation Device Design



Wind vane:

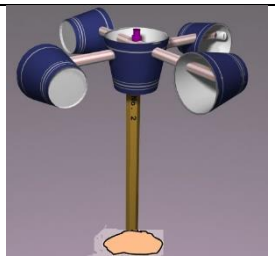
1- Turn a paper cup upside down and write the four directions on its base.
2- Pierce the base of the cup from the middle and insert a wide straw, then put the pen inside the pipette (the pen must be longer than the pipette so the eraser appears).
3- Draw the head and tail of the arrow on paper cards and then cut them out.
4- Slit the pipette from its two ends and place the head and tail of the arrow in the two slits.
5- Positioned the arrow so that it is balanced and pin it to the eraser of the pencil

Thermometer:

1- Fill a bottle having a cap with colored water.
2- Pierce the bottle cap as wide as the pipette (juice suction).
3- Close the bottle using the cap.
4- Pass the pipette from the hole until it reaches the water, then put the clay around the hole to be completely closed.
5- Mark the liquid level in a pipette using a crayon when placed in water of different degrees.

Rain gauge:

1- Cut the top of a plastic water bottle using scissors.
2- Place strips of welding tape on the surface of the bottle so that each strip is 1 cm apart and the lower strip is a different color.
3- Put some marbles in the bottle to fix it from moving.
4- Place the bottle upside down and secure it with the soldering tape.
5- Put the device in an open place where it rains in order to determine the quantity.



Anemometer:

1- Punch each of the four cups with a hole at the same distance from the rim.
2- Punch the fifth cup with a hole in the middle of its base and four holes forming perpendicular sides.
3- Pass each pipette through two opposite holes.
4- Place one of the four cups at the tip of each pipette.
5- Insert the pencil through the hole in the base so that the eraser is inside the cup.
6- Pin the two pipettes in the middle with the eraser of the pen in the cup.
7- Fix the other ends of the pen using a piece of clay.

Worksheet 8

Weather Data

People follow meteorological bulletins related to the weather, and the following is the weather for several days throughout the year as published by the daily newspapers. Collaborate with your classmates and your teacher to read the tables, and describe the different weather manifestations in them:

First day

Moderate weather

Meteorologists expect that temperatures will rise today to return to their rates, and warm weather will prevail in the North during the day, it is cold at night, and dusty winds will prevail, as low clouds appear in the north of the country, and the following are the expected temperatures today.

City	High	Low
Damascus	٢٤	16
Daraa	٢٠	13
Tartous	٢١	14
Idlib	١٨	12

Second day

Cold weather

Meteorologists expect that the drop in temperatures today will extend to all parts, and cold weather will prevail in the North, it is warm in the South during the day and cold at night. Below is a list of the expected temperatures today.

City	High	Low
Damascus	١٨	10
Daraa	١٦	9
Tartous	١٤	8
Idlib	١٢	7

Third day

Hot weather

Meteorologists expect that temperatures will rise today to return to their rates, and warm weather will prevail in the North during the day, it is cold at night, and dusty winds will prevail, as low clouds appear in the north of the country, and the following is the list of the expected temperatures today.

City	High	Low
Damascus	٣٢	٢٠
Daraa	٣٠	١٩
Tartous	٢٦	١٨
Idlib	٢٧	١٧

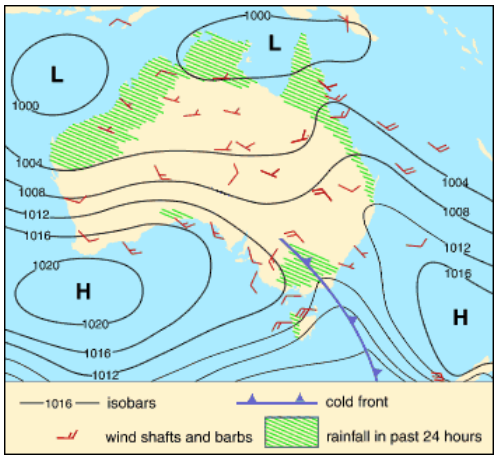
Record the weather changes in the following table, then compare and analyze with your classmates the weather changes on those days.

Compare	Day	Day	Day .....
Weather condition			
Temperature			
Clouds			
Wind			
Rain			

Slide 3

Weather Forecast

- Weather forecasts are based on collecting information of weather elements (temperature, atmospheric pressure, wind speed and direction, amount of rain ....) and following it up over large areas, whether at the surface of the earth or in the upper layers of the atmosphere, through meteorological stations, aircraft, as well as satellites which send these information periodically and regularly by advanced means of communication and various devices to weather forecast centers, and then to various countries of the world..



- When the weather is stable, weather forecast can be predicted for the next day based on the current weather conditions (stable weather conditions, today = tomorrow).
- Using the atmospheric pressure gauge, if the atmospheric pressure drops rapidly, this indicates a depression and a high chance of precipitation. The rapid rise in atmospheric pressure accompanies the improvement and stability of the weather.
- Tracking the movement of air masses. If there is a warm air mass that moves towards a city, the weather will often be warm.
- Monitoring weather conditions is one of the most important weather elements used in weather forecasting; a cloud-free sky indicates a clear atmosphere without rain in the near future, and the presence of clouds with high peaks indicates the possibility of rain in the near future.
- Tracking the movement of clouds leads to predict the time and place of rain.

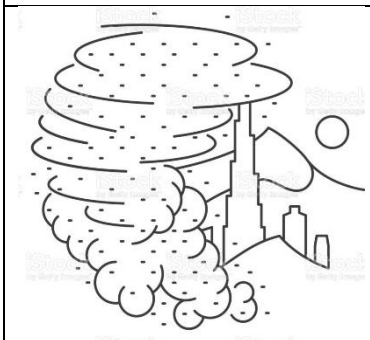
Worksheet 9

Bad Weather

The following drawings show a number of bad weather phenomena. Write the name of the phenomenon that represents it:

Thunder		Cyclone		Drought
Snowstorm		Sandstorm		Flood

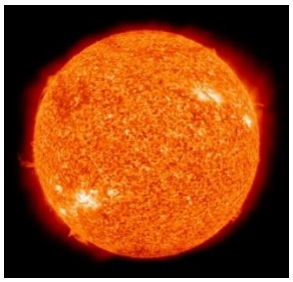


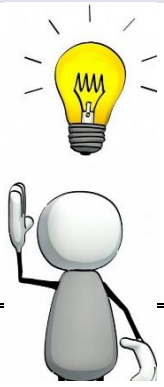
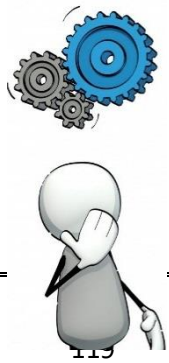
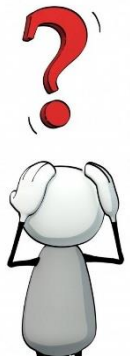
Discuss with your classmates and teacher the losses caused by each of the above phenomena.

Worksheet 1:

Learning Table



Topic: Solar System

K What do you know about the solar system?	W What do you want to know about the solar system?	L What did you learn about the solar system?
.....	.....	.....
		

Worksheet 2

Diagnostic Assessment

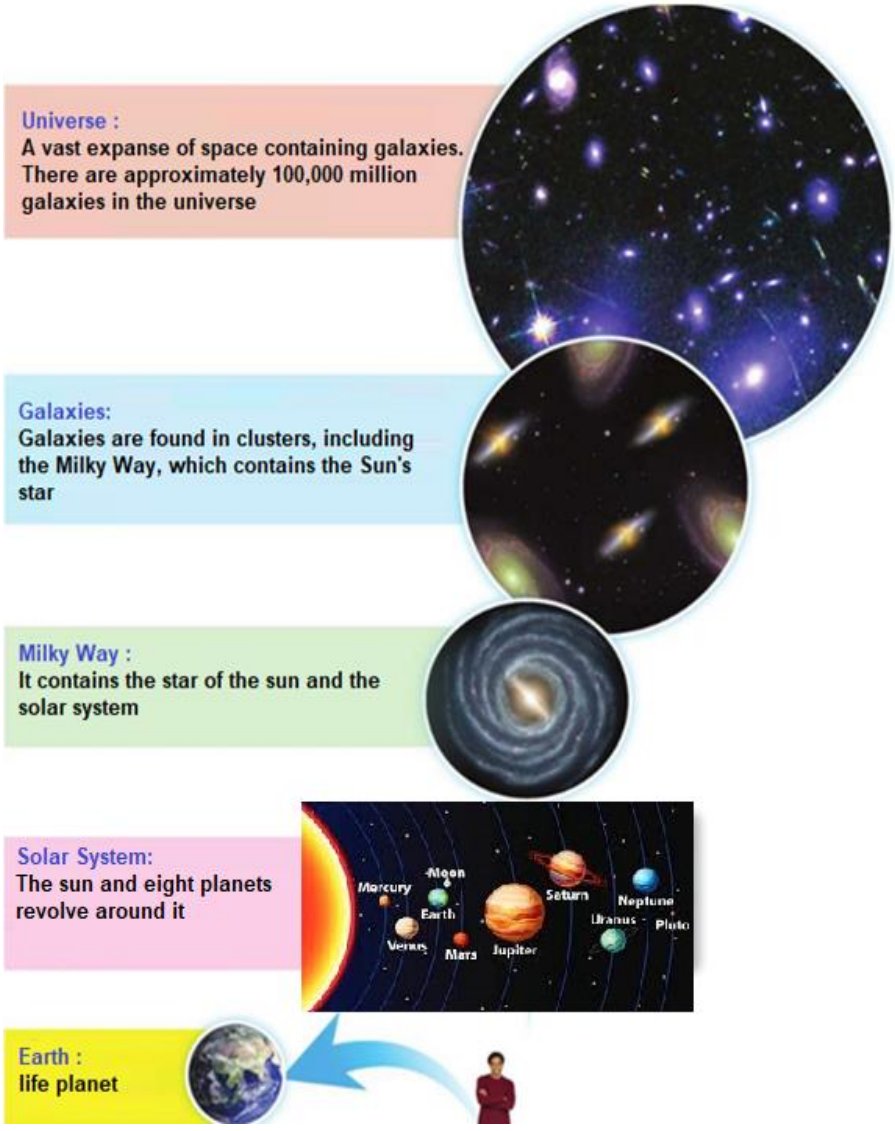
Indicate by true or false:

No.	Statement	True	False
١	Earth is the only planet in the universe.		
٢	The universe is narrow and contains only the Milky Way Galaxy.		
٣	All stars are close to each other in space.		
٤	The universe has no beginning.		
٥	Earth is the center of the solar system.		
٦	Earth is larger than the sun.		
٧	The Solar System is larger than the Galaxy.		
٨	The Solar System contains only the sun, moon، and planets.		
٩	The sun is bigger than all the stars in the sky.		
١٠	The stars do not appear during the day because they do not exist.		
١١	The sun revolves around the earth, so we see it appearing from the east and disappearing from the west.		
١٢	The outer planets are made up of rocks.		
١٣	The moon is a luminous body.		
١٤	The space has an upper and a lower part		

Slide 1

The Structure of the Universe

Observe the following figure, and then describe the structure of the universe:

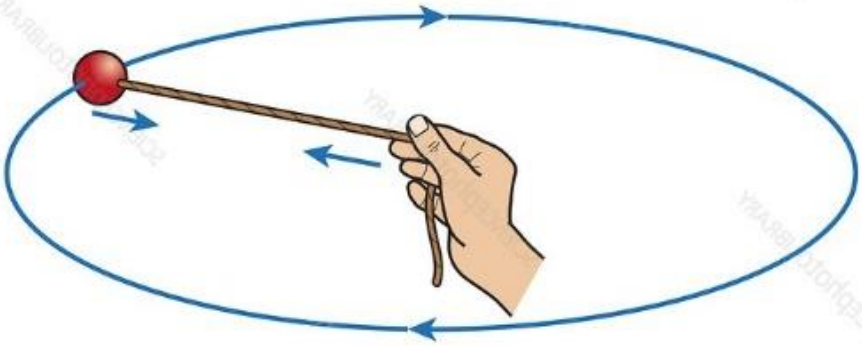


Worksheet 3

The Attraction of the Sun and the Planets

Procedure:

- Tie a metal ring (or small ball) to one end of a string.
- Hold the string in the middle with the right hand.
- Raise your right hand at a level higher than your head, as shown in the figure, and move it in a circle, then increase the speed, what do you observe?
- Leave the string from your hand, (be careful not to hit your classmates with the ring), what do you observe?



what do you observe?

- What does the metal ring represent in this activity? .....
- What does the right hand represent in this activity? .....
- What do the tension forces in the string represent in this activity? .....
- What is the path in which the metal ring rotates? .....

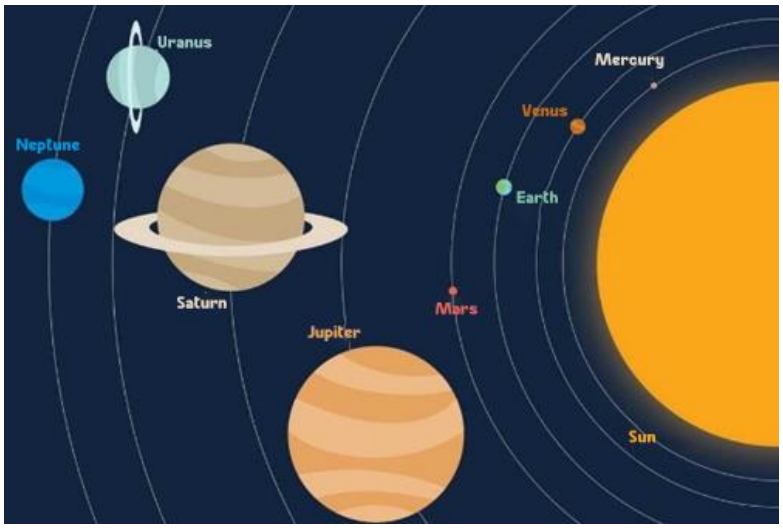
Conclusion:

- .....
- .....

Worksheet 4

Solar System

Observe the following image that represents the solar system, then answer the following questions:



• How many planets are there in the solar system?

....

• What is the position of the sun with respect to the other planets?

....

• Name these planets.....

.....

• What is the order of the Earth with respect to its distance from the sun?

.....

What do you conclude?

• The solar system represents ..... and what revolves around it ..... in elliptical orbits, which are .... in number, however .....is located in the center of the solar system .

Worksheet 5

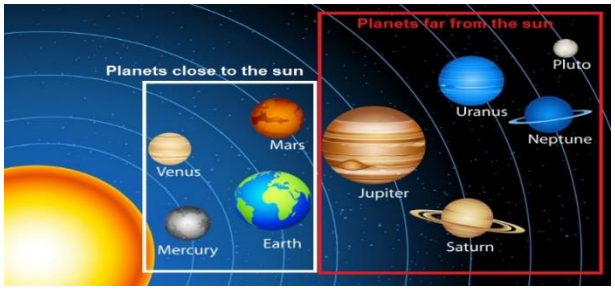
Building a model of the solar system

- Fix the light bulb in the middle of the wooden board.
- Use the wires to make 8 elliptical paths, taking into account the distance of each planet from the sun as given in the table below.
- Use gypsum and water to design 8 different sized spheres, taking into account the diameter of each planet.
- Fix the spherical shapes on the wires, taking into account that they are movable as much as possible.
- Post the names of these planets next to each circle.

Planet	Diameter of the planet in centimeters	Distance of the planet from the sun in centimeters
Mercury	١	٤
Venus	٤	٧
Earth	٤	١٠
Mars	٢	١٥
Jupiter	٤٣	٥٢
Saturn	٣٦	٩٢
Uranus	١٦	١٠٢
Neptune	١٥	٢٠١

Worksheet 6

Planets in the Solar System



Classify the planets of the solar system according to the characteristics shown in the tables:

Components of the planet	hard rocks	Mercury ،..... .....،.....
	frozen gases	Jupiter ،..... .....،.....

Planet Temperature	High	Mars ،..... .....،.....
	low	Neptune ،..... .....،.....

Size of the Planet	Big	،..... ،..... ..... ،.....
	Small	،..... ،..... ..... ،.....

what do you observe?

- .....
- .....

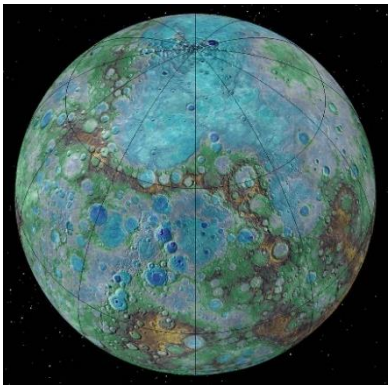
Conclusion:

- .....
- .....

Slide 2

Inner Planets

The inner planets are characterized by rocky, compact surfaces, with a high temperature. They are small in size, and a small number of moons are orbiting around them. These planets are:



A- Mercury:

- The smallest planet, and the closest to the sun.
- A rocky planet that has no atmosphere due to its weak gravity.
- Its temperature rises due to its proximity to the sun.

b- Venus:

- The second far planet from the sun.
- It is the same size as the Earth, so it is called the Earth's twin.
- It is usually the brightest object in the sky after the sun and the moon.
- It is a rocky planet, surrounded by an atmosphere made up of dense clouds of harmful gases, which absorb the sun's heat, and that makes its surface extremely hot.

C- Earth:

- Earth is the third far planet from the sun. It is a rocky planet with an atmosphere that contains oxygen gas necessary for life, and it also contains water.
- One moon revolves around it.
- The earth is located at the exact specific distance from the sun so that it receives specific amount of light and heat.

D- Mars:

- It is called the red planet because the rocks on its surface are red.

- It has a sparsely dense atmosphere, and does not contain oxygen.
- The atmosphere of Mars is colder than the atmosphere of the Earth because of the distance of Mars from the Sun.

Slide 3

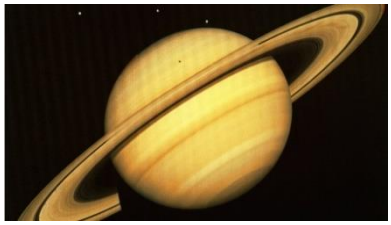
Outer planets

The outer planets are characterized as gaseous, frozen planets of low temperature and large size. These planets are also characterized by the presence of large numbers of moons orbiting them.

A- Jupiter:

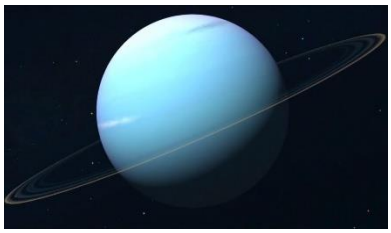
- It is the largest planet.
- Its surface consists of a mixture of frozen liquids and gases, with a permanently large red spot, which is a rotating mass of clouds.
- Jupiter's atmosphere consists of clouds of methane and ammonia.

B- Saturn:



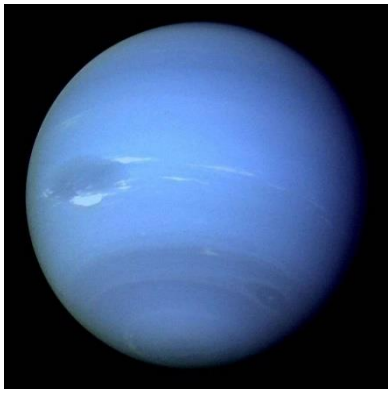
- This planet is famous for the rings that surround it, which consist of pieces of rock covered with icy gases.
- It consists of liquids and frozen gases, and it has a light gaseous atmosphere that is not breathable.
- The temperature on its surface is very cold.

C- Uranus:



- It consists of frozen gases.
- The most important characteristic of Uranus is that it appears in space as a smooth ball of greenish-blue color.

D- Neptune:



- Neptune is the twin planet of Uranus. It is called the blue planet because it appears in the sky as a beautiful blue sun that radiates a faint light.
- It has an atmosphere that contains methane.