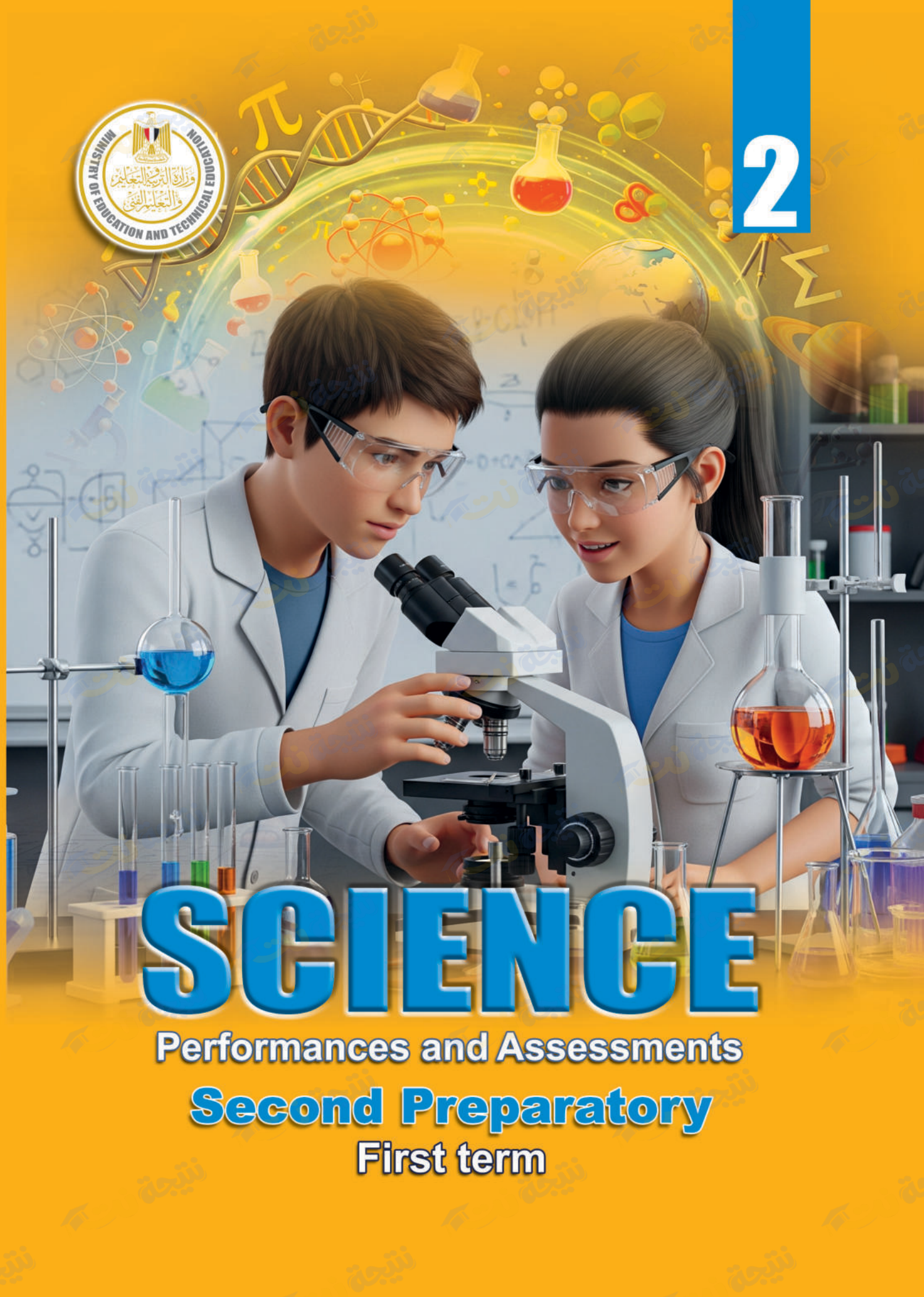
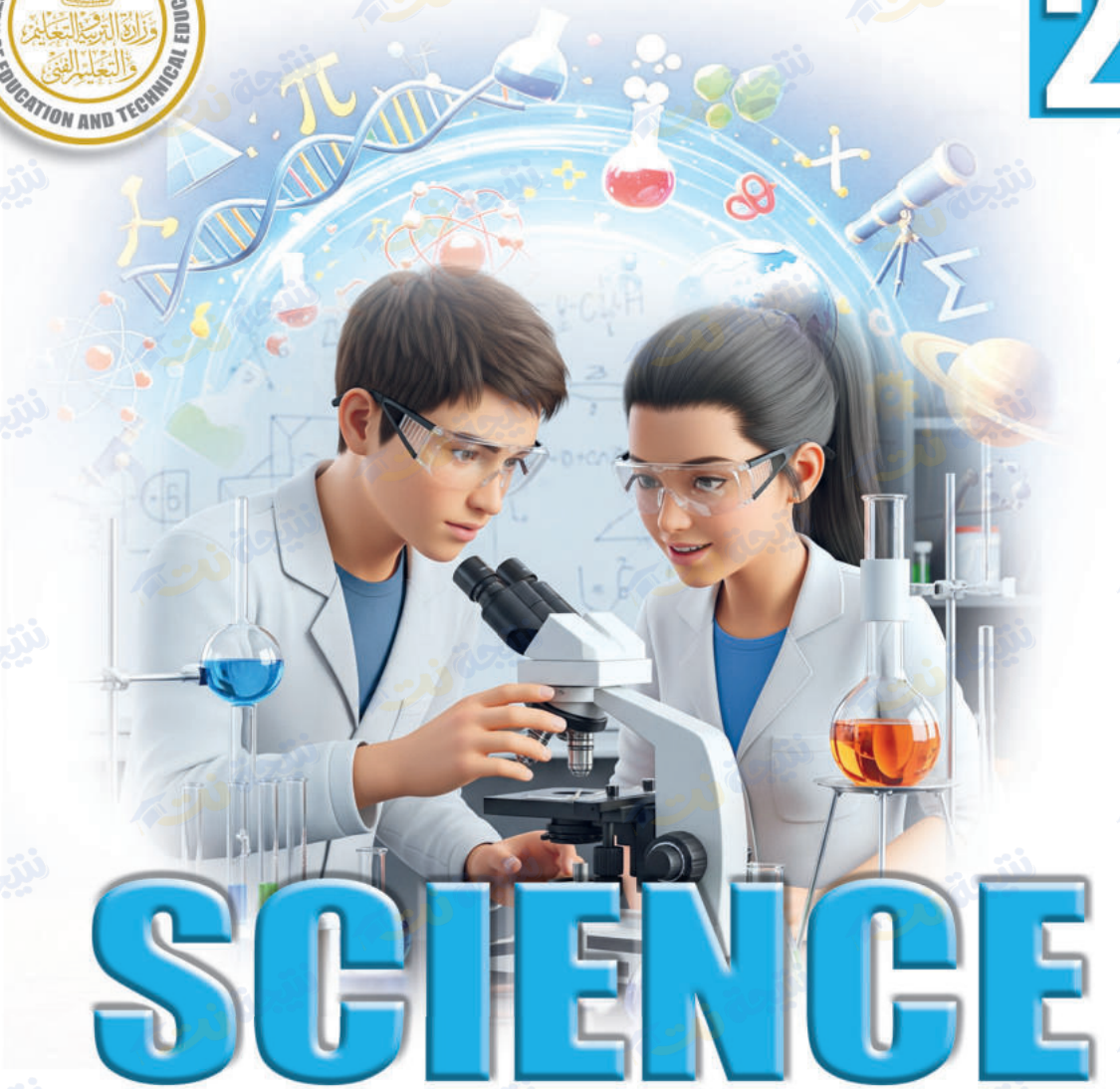

MINISTRY OF EDUCATION AND TECHNICAL EDUCATION
وزارة التربية والتعليم والتعليم الفني
2
SCIENCE
Performances and Assessments
Second Preparatory
First term

2



SCIENCE

Performances and Assessments

Name: .....

Class: .....

School: .....

Second Preparatory

First term

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Introduction

The Ministry of Education and Technical Education recognizes the importance of empowering teachers with effective tools that elevate classroom performance, enhance the quality of education, and improve its outcomes. This is a real response to the voices of teachers, interacting with the feedback channels from the educational field, and meeting the needs of teachers for flexible and comprehensive educational tools that assist them in fulfilling their noble educational mission.

This book has been designed to serve as an integrated educational support for teachers, helping them in planning and executing their teaching tasks efficiently. It also facilitates continuous assessment processes. The content has been designed to offer diverse models of effective classroom performance and educational activities created based on an interactive methodology that enhances active learning. It contributes to a qualitative shift in teaching practices, clearly focusing on the student as the core of the educational process.

The book includes formative and diagnostic questions, as well as purposeful learning tasks that students can complete as homework, enhancing the integration of learning inside and outside the classroom and contributing to the sustainable construction of learning for students. These tools help develop critical and creative thinking, deepen understanding, and support and enhance student motivation, giving them a sense of achievement and excellence.

It also includes short weekly tests and periodic assessments, allowing teachers to measure the extent of learning outcomes and address learning gaps early, providing feedback on the initial results. The performances at the end of each month are concluded with immediate training sessions that help improve student performance. These assessments are gradual, taking into account individual differences and targeting various levels of cognitive development, within a framework of diversity, depth, and integration, preparing students for monthly tests efficiently.

This book is a true translation of the Ministry's directions to ease the burdens on parents, provide supporting educational content that enriches the classroom environment, and allow teachers more time for educational innovation and productive interaction with their students. It also forms an effective tool in supporting the Ministry's direction to enhance learning outcomes, achieving a real transformation in the learning environment—from memorization to understanding, from rote learning to application, and from passive reception to active participation.

When we place this work in the hands of teachers and students, we hope it will be a valuable contribution to improving academic performance, enhancing the quality of education, and becoming an additional cornerstone in building a generation that is aware and knowledgeable, equipped with the skills and competencies needed for success in a world that demands creativity and innovation. It aims to have a tangible impact in realizing an ambitious educational vision for the future of education in our beloved country.

Allah is the one sought for help, and He guides to the right path...

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Lesson (1) **States of matter** Weeks .....

Classroom performance Date: / /

What state am I in?



Study the following figure , then answer :

1-Mention the name of each case? ① ..... ② ..... ③ ..... ④ .....

2- Which states of matter have a definite shape and volume? .....

3- Which state(s) can be flow? .....

4- The state of matter that can diffuse is .....

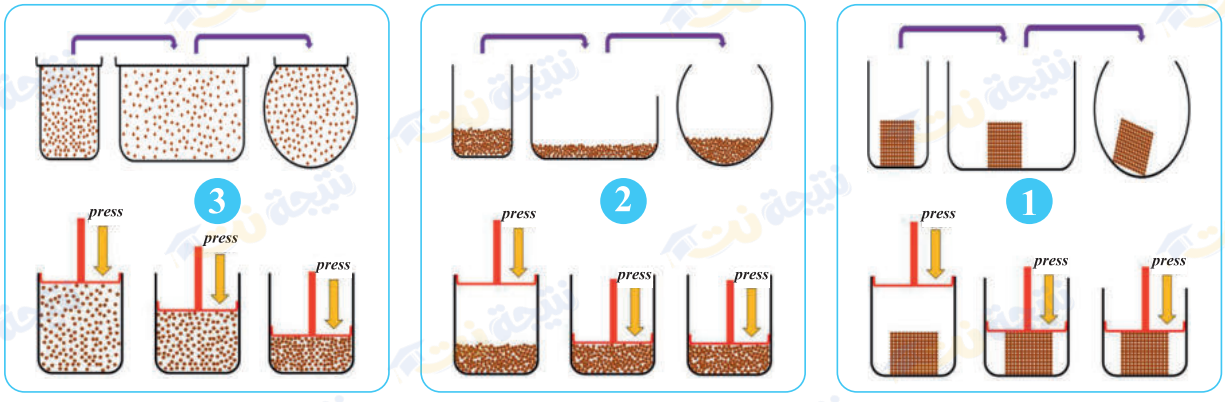
5- Matter can be compressed when it is in the state of .....

6- Liquids and gases are called .....

Note and identify:

Matter properties

- Study the following figures, which illustrate the properties of matter states, then identify the numbers of the images and state of matter that represent each of the following:



1-Its shape does not change by changing the container .....

2- Its shape changes while its volume is constant .....

3- Its shape and volume can be changed .....

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4- Can be compressed .....

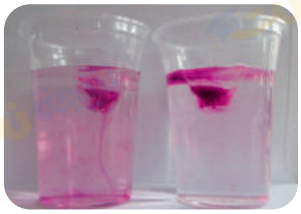
5- Cannot be compressed .....

Complete: From the opposite figure, the color of potassium Permanganate powder spreads faster in ..... water,

Explain your answer?

.....

.....



Hot water cold water

Particle theory

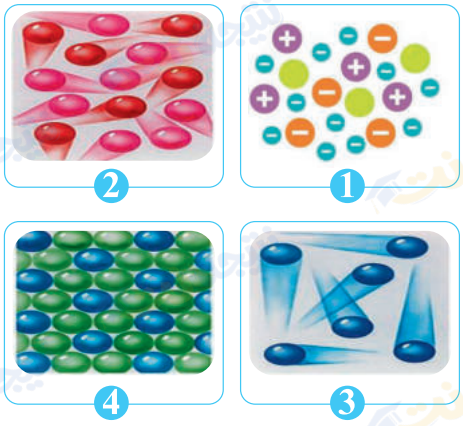
Firstly:

Figure (1) represents the case of .....

Figure (2) represents the case of .....

Figure (3) represents the case of .....

Figure (4) represents the case of .....



Secondly:

- The interparticle spaces are as large as possible in the case of ....., due to ....., between particles.
- The interparticle spaces are as small as possible in the case of ....., due to ....., between particles.

-Using text book and based on what you have studied, explain the meaning of

Matter	.....
Particles	.....
Particle theory	.....
Plasma	.....

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Home performance

-Answer the following:

1- What are the factors that determine the state of matter?

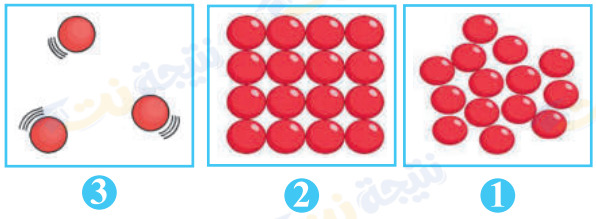
2- What are the factors that determine the speed of diffusion in fluids?

3- Can you hold air? And why?

4- Why does water spill out when you tilt a cup?

5- Why doesn't a sugar cube take the shape of the cup?

-Study the opposite figure well, and then answer:



1- The matter No. ..... can be compressed.

2-..... and…….matters are called fluids.

3- .....matter retains a fixed volume and shape

4- The most diffusion matter is ..... because.....

Weekly assessment (.....)

Write the scientific term:

1-Everything that has mass and volume. (.....)

2- A state of matter that has a definite shape and fixed volume. (.....)

3- A state of matter that has the ability to diffuse and be compressed. (.....)

4- The state of matter that has a fixed volume and varies in shape with the container that contains it. (.....)

5- A theory that explains the behavior and properties of matter. (.....)

6- The movement of particles of matter in fluids is random in all directions. (.....)

7- A state of matter that occurs when gases are ionized into positively and negatively charged ions. (.....)

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Give scientific explanation for each of the following:

1- The solid matter has a fixed shape and a definite volume.

.....

2- The gaseous matter has no fixed shape and no definite volume.

.....

3- The liquid matter is flowable.

.....

4- Gases are compressible.

.....

5- Particles of matter spread faster in gases than in liquids.

.....

6- Plasma is used in air conditioners.

.....

7- It is difficult to break a piece of rock.

.....

8- The possibility of dissolving a quantity of table salt in water.

.....

9- Spreading of smoke produces from a candle wick in the air.

.....

Lesson (2) Changes in the state of matter Weeks .....

Classroom performance **Date: / /**

Change in the physical state of a matter:

- Look at the opposite figure and complete the following:

1- The matter changes from one state to another As shown in the figure, either by..... or .....



2- When particles of matter gains ……..... energy the Kinetic energy of particles increases, and the forces of attraction between them ..... and the ..... increase, so it converts into ..... or.....state.

3- When the particles of matter lose ..... the..... energy of the particles decreases, and become closer to each other, the ..... forces between them increase, and changes to a liquid or solid state.

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4- At normal atmospheric pressure, melting point of ice = ..., while boiling point of water = …..

5- The process of ..... is the opposite of the process of ..... and the process of freezing is the opposite of the process of .....

6- The processes of ..... and ..... occur with a loss of thermal energy, while the processes of ..... and..... occur with a gain of heat energy.

Factors affecting melting and boiling point

1- The atmospheric pressure

Complete the following sentences:

- Pure water boils at a temperature of ..... and as atmospheric pressure increases, the boiling point of water increases above 100 °C, while its freezing point decreases below 0 °C.
- As we rise up atmospheric pressure ……
  and boiling point of water becomes…….. than 100 °C.

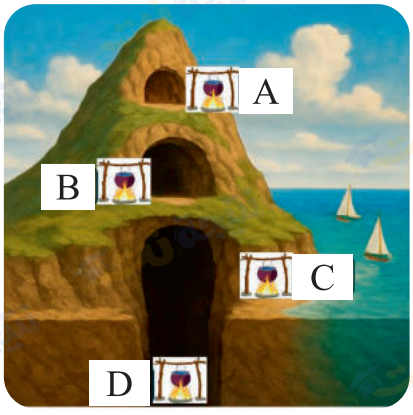
- Pressure cooker (Steam pot)



- Pressure cookers ..... time of cooking food by trapping ....., and increasing pressure, causing water to boil at a higher temperature than in regular pots

Test your understanding

Look at the opposite figure and complete the following:



- The highest boiling point of water is at the point ….....because .....
- The lowest boiling point of water is at the point ..... because .....
- At point ....., the boiling point of water is 100 °C.
- The boiling point of water at point (B) is higher than its boiling point at point ..... and lower than its boiling point at point .....
- The correct descending order of boiling point of water at the four points is :

◯ (A)→(B) →(C) →(D)
◯ (A)→(D) →(C) →(B)
◯ (D)→(C) →(A) →(B)
◯ (D)→(C) →(B) →(A)

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2) Purity degree of the substance

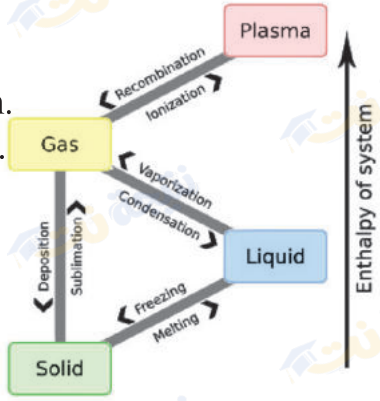
Complete:

- …….. affects on the attraction forces between particles of pure substance, that changes the quantity of ……which required to change its state, so both of ……and ……points of that substance will change.
- By increasing the solution concentration, the ..... point rises and the ..... point drops."

Conversions of the matter are reversible processes

Study the opposite figure, and then complete:

- The matter undergoes a series of some reversible processes, those occur by ..... or ..... thermal energy
- Melting is the reverse of ..... process.
- The Process of..... is the reverse process of evaporation.
- The process of.....is the reverse process of deposition.
- The change of a substance from the solid state directly to the gaseous state without passing through the liquid state is known as ..... as in .....and while the change of a substance from the gaseous state directly to the solid state without passing through the liquid state is known as .....



-Water vapour condenses when it loses..... due to contact with a cold surface and turns into liquid droplets or dew on plant leaves in the early morning.

Factors Affecting the Rate of Evaporation of Liquids

* There are a number of factors that affect the rate of evaporation of liquids.

- Evaporation occurs on the surface of the liquid at any temperature.
- For evaporation to occur, the molecules on the surface of the liquid must have enough energy to overcome the forces of attraction between the molecules of the liquid.

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-Study the opposite figures and answer:

- What factors affect the rate of evaporation? Explain the relation between them.

1-.....

.....

2-.....

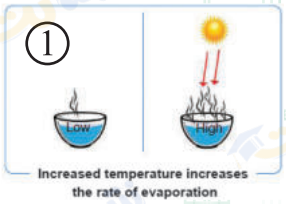
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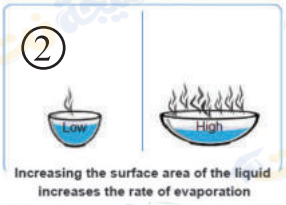
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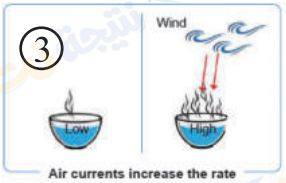
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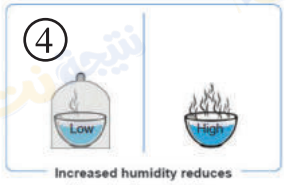
Increased temperature increases the rate of evaporation



Increasing the surface area of the liquid increases the rate of evaporation



Air currents increase the rate of evaporation



Increased humidity reduces the rate of evaporation

** Instant coffee (quick dissolving)

- Instant Coffee that dissolves in water ……than regular coffee.
- It is manufactured by exposing sprayed concentrated coffee to ..... its temperature around .....°C)
- The increase in the surface area of the spray coffee droplets exposed to hot air increases the rate of ....., and the formation of solid instant coffee .....


Instant coffee (quick dissolving)

Using your textbook and in light of what you have studied, write the meaning of the following words:

Melting	.....
Freezing	.....
Evaporation	.....
Boiling	.....
Condensation	.....
Deposition	.....
Sublimation	.....

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Home performance

Answer the following:-

1-What factors affect melting and boiling points

2-What factors affect evaporation process

3-How can you speed up the process of drying wet clothes in winter?

Define the following concepts:-

1-Sublimation 2-Melting point

3-Boiling point 4-Deposition

Compare between each of the following:-

1-Melting and freezing processes

2-Evaporation and condensation processes

Weekly assessment (.....)

Complete the following sentences with suitable words:

1- At normal atmospheric pressure, melting point of ice =……., while boiling point of water =….

2- The .....process is the reverse of ..... process and freezing process is the reverse of the of .....process

3- As we go up, atmospheric pressure..... and boiling point of water …….. than 100° C.

4- …….. change of matter is not accompanied by the formation of new substances, while ……. change produces a new substance.

5- The greatest kinetic energy of matter particles is in the .....state and the least kinetic energy is in the..... state

6- The substance changes from one state to another either by..... or.....

7- During ……and …… processes the temperature of the material remains constant.

8- The two factors that affect the melting and boiling points of a substance are..... and.....

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9- .....boils at a temperature of 100°C under normal atmospheric pressure, and as atmospheric pressure increases, its boiling point becomes..... than 100 °C , and its freezing point becomes..... than 0°C.

10- At normal atmospheric pressure, the melting point of ice = ..., while the boiling point of water =.....

-Write the suitable scientific term for each of the following statements:-

1- The change of matter from the solid state to the gaseous state directly

(.....)

2- The change of matter from the gaseous state to the solid state directly

(.....)

3- Coffee dissolves in water faster than regular coffee (.....)

4- A pot cooks food faster because it traps steam inside (.....)

5- The temperature at which matter changes from a solid to a liquid state.

(.....)

-Give reason for each of the following:-

1- Feeling uncomfortable in hot, humid weather.

.....

2-Wet clothes dry faster on sunny days than on humid days.

.....

3- The pressure cooker saves fuel.

.....

4- The boiling point of water decreases with increasing altitude above sea level.

.....

5- Water evaporates faster from the pot when the stove temperature is raised.

.....

6- Clothes dry faster in summer than in winter

.....

7- Wet clothes dry faster when exposed to air currents.

.....

-Compare between:

1-Evaporation and boiling in terms of (Temperature - place of occurring)

.....

2-Melting and sublimation, mention an example for each.

.....

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-Choose the correct answer:-

1-In which of the following processes the substance gains heat energy?

a) Freezing b) Condensation

c) Sublimation d) Deposition

2- When dry ice solid (CO_2) is heated, it turns directly into gas without passing through the liquid state. This process is called...

a) Evaporation b) boiling

c) sublimation d) melting

The following table shows a variety of places at different altitudes

-Match each location with the appropriate boiling point of water for that location.

What is your conclusion?

Boiling point of water
80 .33°C ( )
101.4°C ( )
87.71°C ( )
69.94°C ( )
100.1°C ( )
99.96°C ( )
100 ° C ( )

Altitude	Location
-427 m	1- Dead Sea
8848 m	2- Everest Summit
0 m	3- Sea level
3640 m	4- La Paz
5859 m	5- Kilimanjaro
14 m	6- London
-28 m	7- Baku

Discuss:

- What factors affect the melting and boiling points?

.....

.....

- What factors affect the evaporation process?

.....

.....

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Lesson (3) **Internal energy and temperature** Weeks.....

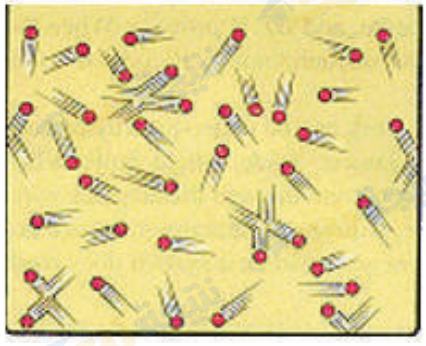
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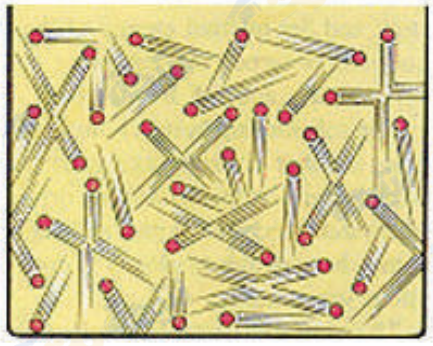
Which system am I?

1-Study the figures shown in the table, then fill in the blanks below:

Point of comparison			
Type of system	.....	.....	.....
Reason for classification	....	....	....

2- Study the following two figures, and then conclude which system has a higher temperature and which has a lower temperature, and explain your answer.





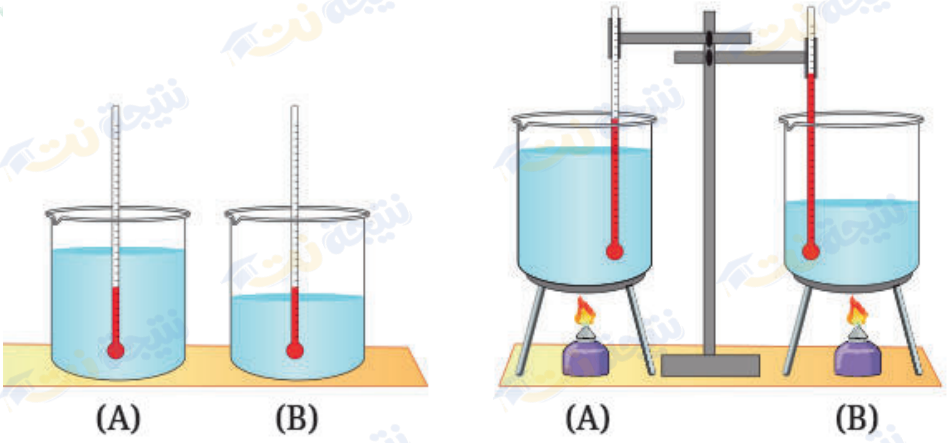
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....

Observe and answer:

3 -If two identical containers containing different amounts of water are heated as shown in the figure for the same period of time with the same flame, which container will register a higher temperature ? (with explanation)

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Container:.....

Explanation: .....

4- The following table shows the specific heat values of three different materials.

Substance	X	Y	Z
Specific heat (J/Kg.°C)	450	900	2000

After studying the table above, answer the following questions:

a) The substance that requires the least amount of heat per kilogram to raise its temperature by 1°C is .....

b) The substance that requires the greatest amount of heat per kilogram to raise its temperature by 1°C is .....

c) The material that needs the longest time to gain the same amount of heat until its temperature rises by 1°C is.....

d) The material that needs the shortest time to gain the same amount of heat until its temperature rises by 1°C is.....

Using text book and in light of what you have studied, explain the meaning of the following words:

System	.....
Internal energy of system	.....
Temperature of system	.....
Specific heat	.....

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Home performance

1-Write the suitable scientific term for each of the following statements:-

1- A system in which there is no exchange of energy and matter with the surrounding medium.
2- A liquid used in cooling due to its high specific heat value.
3- Any part of the universe that is subject to study and observation of changes in energy and matter.
4- It is considered a measure of the average kinetic energy of the particles in the system.

2-Give reason for each of the following:-

1- Mercury is used in the manufacture of thermometers.
2- Water makes up a large proportion of the human body.
3- Copper is preferred for use in the manufacture of heating utensils due to its thermal properties.
4- The temperature of ice rises more than that of water when they both acquire the same amount of thermal energy and their masses are equal.

3-Answer the following:

What factors affect the change in the temperature of objects?

4-Study the corresponding figure and then answer:



1- The figure shows.....
2- Name the liquid used in the figure and explain why.

Weekly assessment

- Complete the following statements with suitable words:

1- The ..... system exchanges energy and matter with the surrounding medium
2- The ..... system does not exchange energy or matter with the surrounding medium
3-The .....system exchanges energy but not matter with the surrounding medium
4- ..... is the sum of the kinetic energy and potential energy of all particles of the system

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5- ..... represents the degree of hotness or coldness of the system.

-Choose the correct answer:

1- The internal energy of any system is …….....

a) The potential energy of the particles only

b) The kinetic energy of the particles only

c) The sum of kinetic energy and potential energy of the particles

d) The emitted heat

2- When heating a substance, the kinetic energy of the particles.....

a) Decreases b) Remains unchanged

c) Increases d) Disappears

3- The change in temperature is calculated by .....

a) Electric potential b) Thermometer

c) Distance meter d) Barometer

4- A system that does not exchange matter or energy with surrounding medium is .....

a) An open system b) A closed system

c) An isolated system d) A thermal system

5- When the internal energy of a substance increases, ...

a) The temperature decreases b) The temperature increases

c) The temperature remains the same d) The particles stop moving

- Compare between equel masses of sand and water exposed to direct sunlight fot the same period of time in terms of:

a) temperature

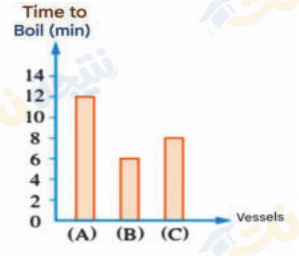
b) internal energy

P.O.C	Sand	Water
Temperature		
Internal energy		

- Does the relative stability of the river water temperature mean that it does not absorb thermal energy? Explain.

.....

- The following graph shows the time it takes for three vessels containing different amounts of water to reach boiling point.



a) Which of these vessels contains the largest amount of water?

.....

b) Identify the controlled variable and the independent variable in this experiment.

.....

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- Compare between

Equal masses of sand and water exposed to direct sunlight for the same period of time in terms of:

a) Temperature b) Internal energy

- What is the difference between internal energy and temperature?

- according to the scientific terms?

.....

Why is the average kinetic energy of hot water particles greater than that of cold water?

.....

.....

.....

Monthly exercise No. (.....)

First question: - Complete the following statements with suitable words:

1- Substances can be classified according to their physical state to ..... common states, that are solid,....., and gases.

2- Fluids are substances that are in a..... or ..... states

3- The matter is compressed in the ..... state to reduce .....

4- The forces of attraction between particles of liquid matter are ..... and the interparticle distances are .....

5- There is a fourth state of matter known as ....., It is found in outer space, such as ..... and .....

6- Plasma is used in air conditioners to purify air by ..... pollutants and germs.

7- ..... is a reverse process of deposition process.

8- The forces of attraction between particles of solid matter are ..... and the interparticle distances are .....

9- Plasma is found in ..... and .....

10- The states of matter vary depending on the ..... between particles.

11- The substance changes from one state to another either by ..... or .....

12- At normal atmospheric pressure, the melting point of snow = ... while the boiling point of water =.....

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13- The greatest kinetic energy of matter particles is in the .....state , and the least kinetic energy is in the .....state

14- The interparticle distances are as large as possible in the …….. state due to…….. between the particles.

15- The interparticle distances are as small as possible in the case of ..... state due to..... between the particles.

16- From the factors affecting melting and boiling points ..... and .....

17- The speed of drying clothes can be increased by..... or.....

18- A system is any part of the ……. that is under study, where changes in …… and …… are observed.

19- The systems are divided into ……..., …… and ..... system.

20- Change in …… refers to transfer energy from or to the system.

Question two:-Write the suitable scientific term for each of the following statements:-

1- A state of matter that has the ability to diffuse and compress.

(.....).

2- A theory that explains the behavior and properties of matter.

(.....).

3- Coffee dissolves in water faster than regular coffee.

(.....).

4- The temperature at which matter changes from a solid to a liquid state.

(.....).

5- The transformation of matter from a solid state to a liquid state by raising the temperature.

(.....).

6- The transformation of matter from a gaseous state to a liquid state by lowering the temperature.

(.....).

7-The amount of heat required to raise the temperature of 1 kilogram of matter by 1 °C.

(.....).

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8-A system in which there is an exchange of matter and energy with the surrounding environment.

(.....).

9-A system in which there is no exchange of matter and energy with the surrounding environment.

(.....).

10-A system in which there is an exchange of energy without matter with the surrounding environment.

(.....).

Question 3: Give reasons for:

1- Gaseous substances do not have a fixed shape or definite volume.

.....

2- Particles of matter diffuse faster in gases than in liquids.

.....

3- It is difficult to break a piece of rock.

.....

4- Feeling uncomfortable in hot, humid weather.

.....

5- The boiling point of water decreases with altitude above sea level.

.....

6- Clothes dry faster in summer than in winter.

.....

7- Copper and aluminum are thermally preferable materials for making heating utensils.

.....

8- Mercury is used in the manufacture of thermometers.

.....

9- Water makes up a large percentage of the human body.

.....

10- Water is used to cool many systems.

.....

Question 4: Identify the factors affecting each of the following:

1- Speed of diffusion in liquids: .....

2- Melting and boiling points: .....

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3- Evaporation process: .....

4- State of matter: .....

5- Change in the temperature of objects: .....

Question 5: Define each of the following:

1- Brownian motion.

.....

2- Sublimation.

.....

3- Particle theory of matter.

.....

4- Plasma.

.....

5- Deposition.

.....

6- Closed system.

.....

7- Temperature.

.....

8- System internal energy.

.....

Lesson (4) **Method of heat transfer** **Week .....**

Classroom performance **Date: / /**

Study then complete

Based on what you have studied, study the opposite figures and then answer: what are the methods of heat transfer shown in the picture?

Figure (1).....

Figure (2).....

Figure (3).....



- What is the difference between methods of heat transfer (1) and (3)?

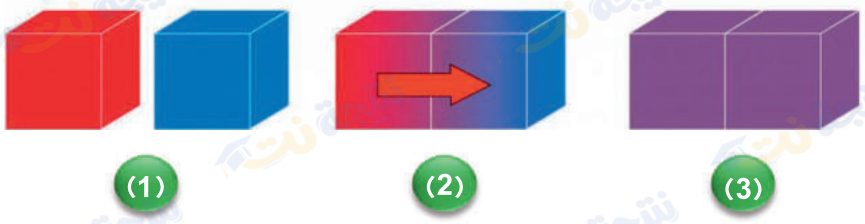
.....

.....

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Study and concentrate

Explain the following figures to illustrate the concept of thermal equilibrium.



(1).....

(2).....

(3).....

Study then answer

In front of you two identical copper cubes touching each other

Figure (1)

1- When does thermal equilibrium occur between the two cubes?

.....

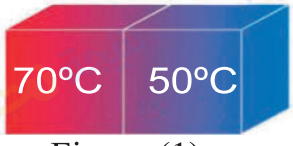


Figure (1)

2- What is the expected temperature of the cubes when thermal equilibrium occurs?

.....

3. Draw the direction of heat flow.

.....

Figure (2)

Does heat transfer between the two cubes? Explain your answer.

.....

.....

.....

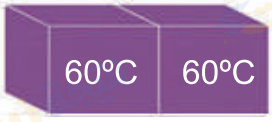


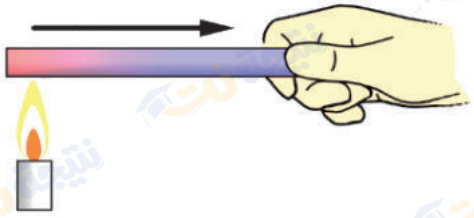
Figure (2)

Observe then determine:

1- Explain why your hand feels the heat of the flame

.....

.....



2- What is the material of the rod you are holding made of?

.....

.....

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3- How did the heat transfer in this example?

.....

.....

4- What happens when you replace the rod you are holding with a wooden rod? Explain your answer.

.....

.....

.....

.....

Observe the following picture well, which shows a substance in two different states in <u>two beakers</u>. Then answer:

1- Which of the two cups has a higher temperature? Why?

.....

2- What happens when the two cups touch each other?

.....

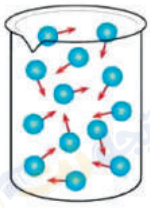


Figure (2)

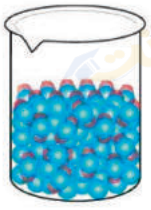


Figure (1)

Study then answer

Explain how heat is transferred by convection

1- .....

2- .....

3- .....



Study then answer

-The figure in front of you for solar heater.

Explain why the pipes of solar heaters are painted black.



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Using your textbook and in light of what you have studied, write the meaning of the following words:

Heat	.....
Thermal equilibrium	.....
Thermal Conduction	.....
Thermal Conductivity	.....
Thermal conductors	.....
Thermal insulators	.....
Sea breeze	.....

Home performance

1-Explain how the properties of a material affect the rate of heat transfer by conduction?

2- Why does heat not transfer in a vacuum by conduction or convection?

3- How does the method of heat transfer differ in metals from that in air?

Explain why:

1- Firefighters wear shiny silver suits.

2- Polystyrene boards are used between hollow bricks when constructing building walls.

Weekly assessment (.....)

1. Define each of the following:

1. Thermal Equilibrium

.....

2. Heat

.....

3. Thermal Conduction

.....

4. Thermal (heat) conductors.

.....

5. Thermal (heat) insulators.

.....

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2. Complete the following sentences with suitable words:

1. Heat transfers in three different ways are....., ..., and .....
2. Energy transfers from a system with a ..... temperature to a system with a ..... temperature.
3. The sun's heat reaches us by ....., while the electric heater's heat reaches us by ..... and .....
4. A ..... camera can detects the ..... radiation emitted by objects and converts it into coloured images.

3. Explain why:

1- Cooking utensils are made of metal while their handles are made of wood or plastic.

.....

2- Polystyrene panels are preferred for use between hollow clay bricks when constructing building walls.

.....

3- Silver is used in the cooling systems of smartphones.

.....

4- An eagle flying high in the air without flapping its wings.

.....

5- The electric heater is placed on the floor of the room.

.....

6- The sea breeze phenomenon occurs.

.....

7- Heat transfers from the sun to the earth despite the great distance between them.

.....

8- Heat transfers from a hot body to a cold body.

.....

9- The refrigerator freezer is placed at the top of the refrigerator.

.....

10- Snakes are able to hunt their prey at night.

.....

4. How does heat transfer in an electric oven? And why?



.....

5. Compare between: Convection and Radiation.

Mention a practical example for each method.

.....

.....

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Lesson (1) Chemical reactions Weeks.....

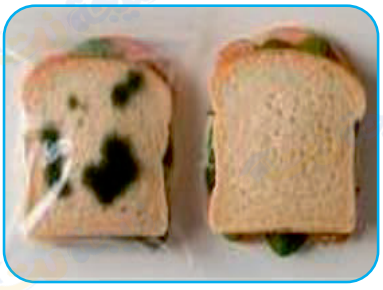
Classroom performance **Date:** / /

What type of change occurs in each of the following, and what is the reason?



(1) Adding a quantity of vinegar to baking soda

.....change



(2) Moldy bread.

.....change



(3) Fireworks

.....change



(4) Water with tea leaves added to it.

.....change



(5)Exposing iron to humid atmosphere

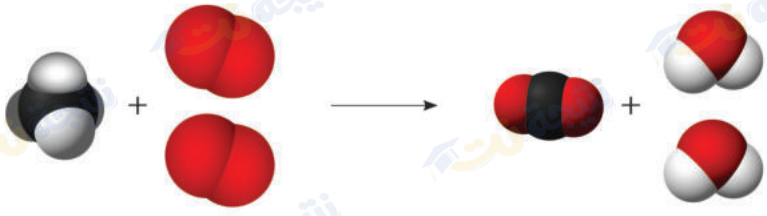
.....change



(6)Melting of candle

.....change

The Concept of Chemical Reaction **Study then answer**



Methane + Oxygen ..... + ...

1-The previous figure illustrates a chemical reaction.

(a) What happened to the reactants? .....

(b) How were the products formed? .....

(c) The chemical reaction is... .....

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Indications of the occurrence of a chemical Reaction

- There are many different indications which can indicate the occurrence of a chemical reaction , for example:

1- Formation of a ..... , as adding silver nitrate solution to .....solution

2- Change in ..... as the reaction of ..... with .....

3- Evolution of ..... when adding ..... metal to .....acid

4- Emission of .....and ..... like what happens when .....

Using your textbook and in light of what you have studied, write the meaning of the following words:

Physical change	.....
Chemical change	.....
Chemical reaction	.....

Home performance

- Compare between physical and chemical changes? In terms of (definition – Examples)

.....

.....

.....

- What is meant by a chemical reaction?

-What happens when...?

1- Adding a silver nitrate solution to a sodium chloride solution.

2- Exposing a silver chloride precipitate to sunlight.

3- Placing a zinc plate in a copper sulphate solution.

4- Placing a magnesium strip in a test tube containing dilute hydrochloric acid.

5- Lighting a magnesium ribbon in the air.

6- Heating a spoon with sugar on a flame for a period of time.

7- Adding sodium hydroxide to cooking oil.

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-How do we infer the occurrence of a chemical reaction?

-Complete the following table?

	(A) Element Compound	(B) (Chemical formula or chemical symbol)
1	Silver nitrate	(.....)
2	Silver Chloride	(.....)
3	Sodium Chloride	(.....)
4	Copper Sulphate	(.....)
5	Zinc Sulphate	(.....)
6	Hydrochloric acid	(.....)
7	Magnesium	(.....)
8	Copper	(.....)
9	Hydrogen	(.....)
10	Magnesium Chloride	(.....)
11	Magnesium Oxide	(.....)
12	Sulphuric acid	(.....)
13	Sodium bicarbonate (Baking soda)	(.....)
14	Sodium hydroxide (Caustic Soda)	(.....)

Weekly assessment (.....)

What is meant by each of the following:

1- Chemical change.

.....

2- Physical change.

.....

3- Chemical reaction.

.....

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- Give scientific reason for each of the following :

1- The melting of a candle is considered a physical change, while the burning of coal is a chemical change.

.....

2- When a zinc plate is placed in a beaker containing a blue copper sulphate solution, the blue color disappears.

.....

3- A magnesium strip must be held with a tongs before Igniting it with a flame.

.....

What do you observe when...?

1- Burning table sugar.

.....

2- Heating a mixture of caustic soda and oil with continuous stirring.

.....

3- Slices of apple or potato are left exposed to the atmospheric air.

.....

How do you infer that a chemical reaction has occurred in the following experiments?

1- Frying an egg.

.....

2- Lighting fireworks.

.....

3- Adding a piece of a magnesium strip to a test tube containing dilute hydrochloric acid.

.....

Write the chemical formula for the following compounds:

1- Silver nitrate (.....)
2- Sodium chloride (.....)
3- Silver chloride (.....)
4- Sodium nitrate (.....)
5- Hydrochloric acid (.....)
6- Copper sulphate (.....)
7- Zinc sulphate (.....)
8- Magnesium oxide (.....)
9- Copper chloride (.....)
10- Sodium hydroxide (.....)

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Lesson (2) Chemical equation Week.....

Classroom performance **Date:** / /

1-Balance the following equations.

Then write the physical state of the reactants and products.

(a) $H_{2(...)} + O_{2(...)} \longrightarrow H_2O_{(...)}$

.....

(b) $S_{(s)} + O_{2(...)} \longrightarrow SO_{3(g)}$

.....

(C) $K_{(...)} + Br_{2(...)} \longrightarrow KBr_{(s)}$

.....

(d) $C_6H_{12}O_{6(s)} + O_{2(...)} \longrightarrow CO_{2(...)} + H_2O_{(...)}$

.....

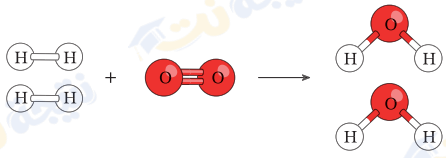
(e) $H_2O_{(...)} \xrightarrow{\text{electrolysis}} H_{2(...)} + O_{2\,(...)}$

.....

2-The following figure illustrates a chemical reaction.

(a) Write the reaction equation. .....

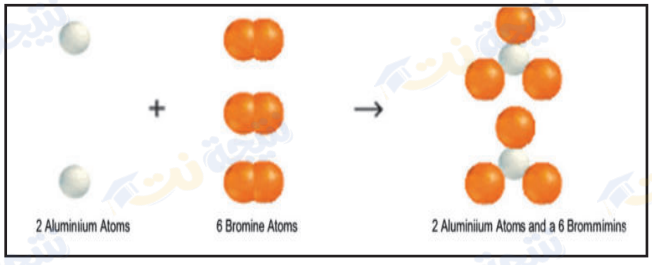
(b) Write the physical state of the reactants and products .....



Find:

(c) The sum of the number of molecules of the reactants and products.

(d) The sum of the number of atoms of the reactants and products.



-The figure above illustrates a chemical reaction.

Write the balanced reaction equation.

.....

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Assisted on schoolbook and in light of what you have studied, explain the meaning of the following words:

Law of conservation of mass	.....
Chemical equation	.....



Define each of the following:

1-Balanced chemical equation

2-Catalysts

3-Law of Conservation of Mass

4-Law of Conservation of Matter 5-Subscripts

-When is an equation balanced?

.....

.....

Choose from column (B) the suitable for column (A)

(A)	Physical State or Meaning Symbol	(B) Symbol
1	Using a concentrated acid	S (.....)
2	Vapor	L (.....)
3	Using a catalyst	G (.....)
4	Aqueous solution (substance dissolved in water)	V (.....)
5	Gas	aq (.....)
6	Heating (Heat)	conc (.....)
7	Solid or precipitate	dil (.....)
8	Liquid	cat (.....)
9	Using a dilute acid	Δ (.....)

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- **What happens when:** A calcium chloride solution is added to a sodium sulphate solution?

Explain your answer with a balanced equation.

.....

.....

- **Balance the following equations, and then write the physical state of the reactants and products.**

1 – $Zn + AgNO_3 \longrightarrow Zn(NO_3)_2 + Ag$

.....

2 – $Al + H_2SO_4 \longrightarrow Al_2(SO_4)_3 + H_2$

.....

3 – $Na + H_2O \longrightarrow NaOH + H_2$

.....

4 – $NaNO_3 \longrightarrow NaNO_2 + O_2$

.....

5 – $Al + O_2 \longrightarrow Al_2O_3$

.....

6 – $N_2 + H_2 \longrightarrow NH_3$

.....

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Monthly Exercise (.....)

-What is meant by each of the following?

1- System

.....

2- Open system

.....

3- Closed system

.....

4- Isolated system

.....

5- Internal Energy of the system

.....

6- Temperature of the system

.....

7- Specific Heat

.....

8- Heat

.....

9- Thermal equilibrium

.....

10- Thermal conduction

.....

11- Thermal conductivity

.....

12- Thermal (heat) Conductors

.....

13-Thermal (heat) insulators

.....

14- Sea breeze

.....

15- Physical change

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.....

16- chemical change

.....

17- Chemical equation

.....

18- Balanced chemical equation

.....

19- Catalysts

.....

20- Law of Conservation of Mass

.....

21- Subscripts

.....

Various Questions

1-What are the factors that affect the temperature of a body (system)?

.....

2-What are the steps of a chemical reaction?

.....

3-What are the laboratory safety precautions when burning a magnesium ribbon?

.....

4- Mention examples of some chemical reactions that occur in daily life.

.....

Compare between each of the following in terms of definition and examples:

1- Open systems, closed systems, and isolated insulators.

.....

.....

2- Thermal conductors and thermal isulators.

.....

.....

3- Physical change and chemical change.

.....

.....

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Give reason for each of the following:

1-Increasing temperature of a substance increases by decreasing its mass when it gains the same amount of thermal energy.

.....

2-When heating two equal quantities of water and oil for the same period of time and from the same heat source, the increase in the oil's temperature is greater than that of water.

.....

3- It is preferable to make cooking utensils from copper instead of aluminum.

.....

4- Mercury is used in the manufacture of thermometers.

.....

5- Water is the main component of the human body.

.....

6- When a quantity of iron balls at 80˚C is mixed with a quantity of water at 30˚C, the temperature of the mixture at equilibrium is not 55˚C.

.....

7- The concept of heat differs from the concept of temperature.

.....

8- Cooking utensils are made of aluminum and their handles are made of wood.

.....

9- Polystyrene panels are preferred for use between hollow clay bricks when constructing buildings.

.....

10-There are cooling systems inside computers that use materials with good thermal conductivity, such as silver.

.....

11- The electric heater is is placed on the floor of the room.

.....

12-The sun's heat reaches us by radiation.

.....

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13-Snakes are able to hunt their prey at night.

.....

14- The burning of wood is a chemical change, while the melting of ice is a physical change.

.....

15-When burning a magnesium ribbon, it is a must to wear a protective mask.

.....

Choose from column (B) the suitable for column (A)

(A) The compound		(B) Chemical formula
1	Sodium nitrate	HI
2	Hydrogen iodide	$FeSO_4$
3	Iron sulphate	NH_3
4	Ammonia	$NaNO_3$

Write the balanced symbolic chemical equations that express the following reactions, with the physical state of the reactants and products:

1- Reaction of magnesium metal with dilute hydrochloric acid.

.....

2- Combustion of methane gas in an abundance of oxygen gas, with the reaction condition.

.....

3- Heating mercury (II) oxide powder strongly to form mercury and oxygen.

.....

4- Reaction of magnesium with dilute sulfuric acid to form magnesium sulfate soluble in water and hydrogen gas.

.....

5- Reaction of solid iodine with hydrogen gas to form hydrogen iodide gas.

.....

6- Reaction of nitrogen gas with hydrogen gas to form ammonia gas.

.....

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Lesson (3) **Nutritional Chemistry** Week.....

Classroom performance **Date:** / /

Analyze the table:

- Have you ever thought about what the nutritional value of your meal consists of, Discuss with your classmates and list some of the components.

Nutritional value of cow's milk (estimated per 240 ml cup)			
Carbohydrates (gm)	Protein (gm)	Fats (gm)	Calories
11.5	11.8	9.05	158
Nutritional value of..... from your meal			
Carbohydrates (gm)	Protein (gm)	Fats (gm)	Calories
.....	.....	.....	.....

Analyze the image in front of you, and then complete:



1- Carbohydrates are organic compounds composed of the elements: ..... , ... , and ..... , And among their most important sources are: ....., ..., and .....

Compare between glucose, sucrose, and starch.

Comparison points	Glucose	Sucrose	Starch
Type	....	....	....
Molecular structure	....	....	....
Examples	.....	.....	.....

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A blood sample was taken from a group of people, and the analysis results are shown in the opposite figure.

-Analyze and explain the different colors of the results.

.....

.....

.....

.....

Blood Sugar level

HbA1c (Average)	mg/dL	mmol/L	
14	380	21.1	
13	350	19.3	
12	315	17.4	Medical Control
11	280	15.6	
10	250	13.7	
9	215	11.9	
8	180	10.0	Good Control
7	150	8.2	
6	115	6.3	Excellent Control
5	80	4.7	
4	50	2.6	

- The image in front of you shows foods rich in……..

- This substance is composed of……..

- It is detected using……..

- Overconsumption of it leads to the affliction by….



- The experiment shown is used to detect .....

-This substance is composed of.....

- Identify the changes that occur to the Biuret solution.

.....

.....



Assisted on schoolbook and in light of what you have studied, explain the meaning of the following words:

Nutritional chemistry	.....
Carbohydrates	.....
Fats	.....
Proteins	.....

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Home performance

-Compare between: The structure of carbohydrates, fats and proteins

-Write the scientific term for each of the following:

1. One of the branches of chemistry concerned with studying types of food materials.
2. The simplest form of carbohydrates that cannot be hydrolyzed.
3. A fatty substance whose deposition on the arteries leads to heart risks.

-Correct the following statements:

1. Fats and proteins are composed of the same chemical substances.
2. Starch is detected using Benedict's blue solution.
3. Carbohydrates are composed of basic units called amino acids.

-Explain why:

1. Carbohydrates are very important for humans.
2. Humans are afflicted with diabetes.
3. Living organisms benefit from proteins.

-What happens when...?:

1. Iodine solution is added to potatoes Slices.
2. Intake large quantities of butter and eggs.
3. Excessive intake of dietary supplements.

Weekly assessment (.....)

-Write the term for each of the following:(.....)

1. Sugars composed of 3 to 9 units of monosaccharaides.
.....
2. Sugars composed of more than 9 units of monosaccharaides.
.....
3. A substance made of fat whose deposition inside arteries causes blockages and leads to heart diseases.
.....
4. Proteins that can be used as catalysts.
.....
5. Basic units that compose proteins.
.....
6. A substance in which excess carbohydrates are stored.
.....
7. A substance used to detect glucose sugar.
.....

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-Correct the mistake in the following statements if any:

1. Carbohydrates provide the body with twice the energy that fats do.
(.....)
2. Glucose sugar is a monosaccharide. (.....)
3. Benedict's blue solution is used to detect fats. (.....)
4. Proteins accumulate in the blood as a result of a lack of insulin secretion.
(.....)
5. Yogurt and eggs are sources of carbohydrates. (.....)
6. Sudan (IV) solution is used on the surfaces of mixtures that contain proteins.
(.....)
7. Biuret solution changes color from blue to green when proteins are added.
(.....)

-Give reason for each of the following:

1. It is necessary to intake potatoes and rice in moderate quantities.

.....

2. Carbohydrates play an important role in industry.

.....

3. Sucrose is one of the disaccharides.

.....

4. The color of Benedict's blue solution changes when added to different concentrations of glucose.

.....

5. When iodine is added to potatoes, the iodine solution turns blue.

.....

6. Biuret solution turns from blue to purple when added to egg whites.

.....

7. There are multiple sources of proteins in food.

.....

8. There are risks from the excessive use of dietary supplements.

.....

9. Proteins have great benefits in industries.

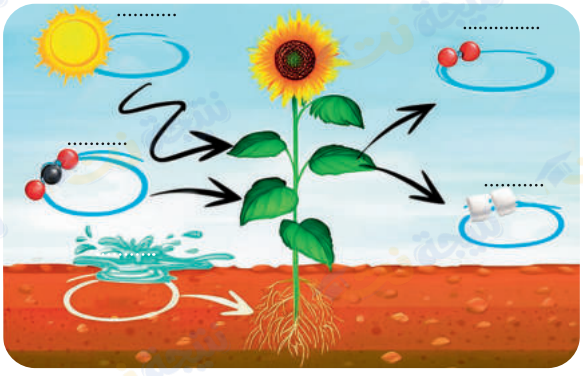
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Lesson (1) **Photosynthesis Process** Week

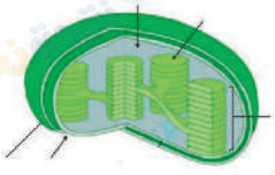
Classroom performance **Date:** / /

Look at the following picture, then answer the following questions:



- What are the essential materials that plants need to live and grow?.....
- How does water enter the plant?.....
- Which gas in the air can plants use to make their own food? ....
- What do plants make with sunlight, water, and carbon dioxide? .....
- Plants absorb light energy from ..... through chlorophyll found in .....
- The process of making food and producing oxygen from sunlight, water, and carbon dioxide is called .....

Look at the shape of the green plastid, then write the labels on the following figure and complete the sentences:



- ..... contains the enzymes necessary for light independent reactions
- Light dependent reactions take place in .....
- Plastids are classified into ....., ..., and ..... according to the pigments that make them up

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Complete the following diagram:

Photosynthesis process

The stage of light dependent reactions

- These chemical reactions occur on ..... in the presence of light as follows:
- Chlorophyll absorbs ..... and ..... light energies from visible light, causing chlorophyll to become active (excited).
- Part of the energy of the activated chlorophyll is used to decompose water into ..... and .....
- The remaining energy of the activated chlorophyll is used in the ..... reactions stage.

The stage of light in dependent reactions

- These chemical reactions occur in ..... in the absence of light, as follows:
- Hydrogen is carried on one of the chemical compounds found on the membranes of ..... is transferred to .....
- Hydrogen combines with carbon dioxide absorbed from the air in the presence of the energy produced from the light-dependent reactions and enzymes found in ..... to produce .....

- The plant rearranges the atoms it has obtained, which are..... molecules absorbed from the soil and ..... absorbed from the air in the presence of ..... to form its food (.....sugar) and release ..... gas as a by-product.

Using the school book and based on what you have studied, write down what the following concepts refer to:

Photosynthesis	.....
Green plastids	.....
Stroma	.....
Grana	.....
Chlorophyll	.....
Vertical farming	.....

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Home performance

1- What gas do plants use to make their own food?
2- What is the green substance in plants that absorbs light?
3- Give reason : Glucose molecules is produced during the light independent reactions of photosynthesis are linked together in long chains to form starch granules.
4- Mention the stages of photosynthesis and identify where each stage takes place.
5 -What factors affect the rate of photosynthesis process?

Weekly assessment (.....)

Correct the underlined statements:

1- Glucose is stored in plants in the form of **protein**.
2- Vertical farming helps us solve the problem of **flooding**.
3- Photosynthesis takes place **in the mitochondria** found in the green parts of plants.
4-Light dependent reactions occur within **the stroma** found in green plastids.
5- The process of converting light energy into chemical energy within plants is known as **combustion**.
6- When iodine solution is added to a green plant leaf containing starch, it turns **red**.

Write down what the following statements mean:

1- Vessels that allow nutrients to move from the leaves to the rest of the plant parts. (.....)
2- A type of pigment inside chloroplasts that gives plant leaves their green colour. (.....)
3- The ground of the plastid (the matrix) contains the enzymes necessary for light independent reaction. (.....)

Give reason for:

1- Flower petals are colourful.
.....

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2- Plant leaves appear green.

.....

3- The importance of chlorophyll in photosynthesis process.

.....

Green plastids are made up of a group of components. Identify the function of the following parts:

1- Grana: .....

2- Stroma: .....

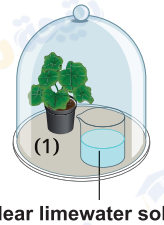
3- Double membrane: .....

Lesson (2) The process of cellular respiration Week.....

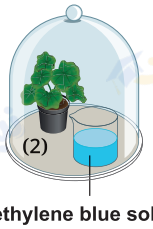
Classroom performance **Date:** / /

Observe and identify:

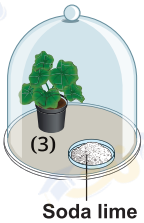
Observe what happens in the experiment illustrated in the corresponding figures, then complete the following:



Clear limewater solution
Figure (1)



Methylene blue solution
Figure (2)



Soda lime
Figure (3)

1- The plant performs the process of ..... day and night, obtaining ..... gas and releasing ..... gas.

2- Plants carry out the process of ..... during the day only.

3- The disappearance of the blue colour of the methylene blue solution is evidence of the consumption of ..... gas.

4- The turbidity of lime water is evidence of the formation of .....

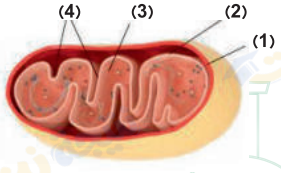
5- Soda lime absorbs ..... from the surrounding environment.

Observe the opposite figure and answer the following questions:

1. Write the data on the drawing.
2. Complete the following:

   A- The opposite figure represents .....

   B- It performs ..... from food substances.



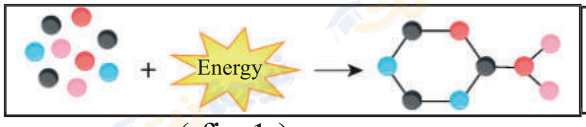
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Complete the table about the Mechanism of Cellular Respiration

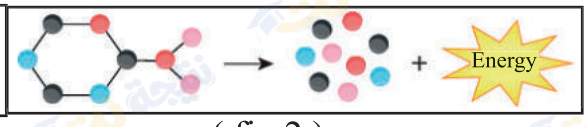
Point of comparison	First stage	Second stage
The site of occurrence	.....	.....
With or without oxygen	.....	.....
Results	.....	.....

Observe and identify:

- Which of the two figures represents Anabolism (buliding up process) ? Why? Give an example.



(fig.1)



(fig.2)

Figure ( ) because.....

as .....

- Which of the two figures represents Catabolism (a breaking down process) ? Why?

Figure ( ) because.....

as .....

Look at the picture below and answer the following questions:

1- What is the name of the device in the picture?

.....

2- Identify its function

.....



Using the school book and in light of what you have studied, write down what the following vocabulary words refer to:

Cellular respiration	.....
Mitochondria	.....
Matrix	.....

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Pyruvic acid	.....
Metabolism	.....
Anabolism	.....
Catabolism	.....

Home performance

Write down what the following statements mean:

1- A vital process in which carbon dioxide and oxygen are exchanged with the surrounding environment. (.....)

2- Specialized organelles that resemble beans and are found in most living cells. (.....)

Give reasons for the following:

1- Mitochondria are energy-producing powerhouses.

2- Photosynthesis is a building process, while cellular respiration is a breaking-down process.

3- The cristae of the mitochondria are folded (zigzagged)

What happens when:

1- A plant is placed with a methylene blue solution under a transparent glass bell jar exposed to light.

2- The outer membrane of the mitochondria is ruptured.

Compare each of the following:

1- Green plastids and mitochondria " in terms of: shape, structure and importance".

2- Photosynthesis and cellular respiration" in terms of: where they occur in the cell, and the reaction equation".

3- The first stage of photosynthesis and cellular respiration in terms of: where they occur and the substance that decomposes.

Identify the catabolism and anabolism processes in each of the following:

1- Conversion of amino acids to proteins.

2- Cellular respiration.

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Weekly Assessment (.....)

Complete the following:

1- Plants produce oxygen gas in the process of .....

2- Mitochondria perform..... process

3- The first stage of cellular respiration takes place in .....

4- The second stage of cellular respiration takes place in .....

5- ..... is used to detect the presence of carbon dioxide.

List one importance for each of the following:

a) Mitochondrial cristae.

.....

b) Metabolic analyser.

.....

What happens when .....?

1- Placing a plant with sodium carbonate under a glass bell jar in a dark place.

.....

2- The cristae of the mitochondria become flat.

.....

3- The absence of oxygen in the two stages of cellular respiration.

.....

4- Enzymes are removed from the mitochondrial matrix.

.....

Compare each of the following:

1- The break down process of (catabolism) and the building up process (anabolism)

.....

.....

2-Glycogen and protein

.....

.....

3- The second stage of photosynthesis and cellular respiration.

.....

.....

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4- The reactions of the first and second stages of cellular respiration.

.....

.....

5- The outer membrane and inner membrane of the mitochondria.

.....

.....

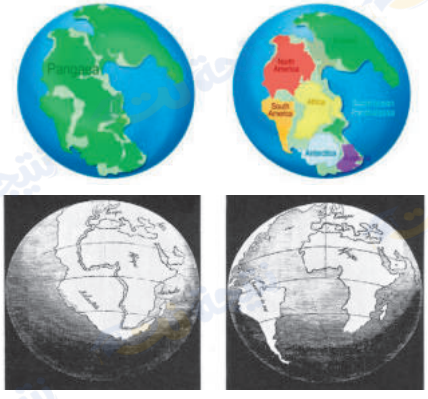
Use the following to write two equations, one expressing photosynthesis and the other expressing cellular respiration:

Glucose – $6O_2$ – $6CO_2$ – $6H_2O$ – Light energy – heat energy

Lesson (1) Change in the Earth's surface Week .....

Class performance **Date:** / /

Continental drift



- In 1912, the scientist Alfred Wegener presented his theory known as 'continental drift,' in which he supposed that 200 million years ago, the Earth was a single continent called ..... Then, over time, it began to drift. 135 million years ago, the continents of ..... and ..... began to separate from each other, and over time, they took on their current shapes

The theory of tectonic plates

- This theory is based on a set of assumptions, which are:

1- The Earth's lithosphere consists of the ..... layer and the solid part of the ....., and is divided into rigid plates known as .....

2- Tectonic plates are divided into ..... plates and ..... plates

3- Tectonic plates move slowly and continuously over a layer of molten rocks called ..... as a result of the movement of ..... in the asthenosphere layer.

Observe and identify:

Here is a picture of one of the Earth's surface features:



- What is the Earth's surface feature shown in the picture? .....
- Classify the type of tectonic movement? .....
- Name the two types of plates .....

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Have a look at the figures in front of you and then compare:

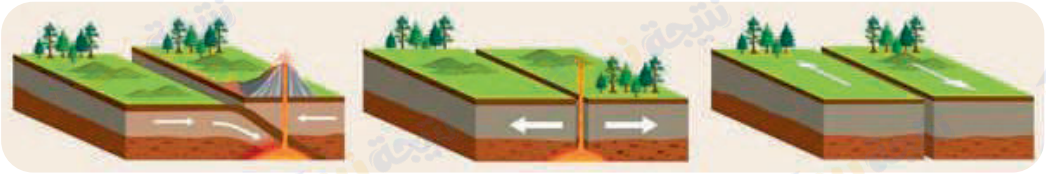
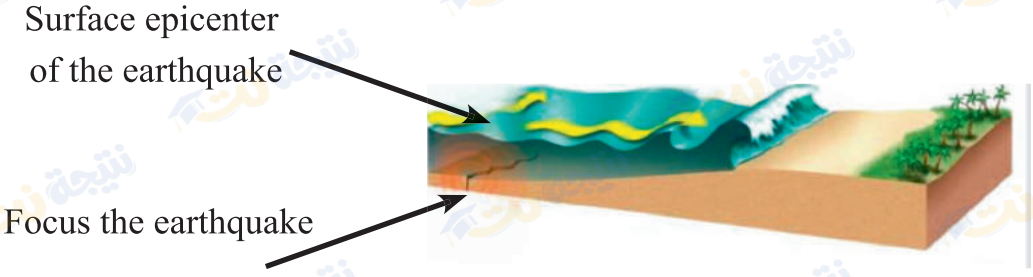


Figure (A) Figure (B) Figure (C)

Point of comparison	Figure (A).	Figure (B).	Figure (C).
Name of figure			
Reason for occur-rence			
The results of this			

Look at the figure in front of you and answer



- What is the name of this phenomenon?

.....

- What causes it? .....

- What happens as a result of that phenomenon .....

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Study and answer

Look at the shape of the volcano in front of you and answer:



- What is a volcano? .....
- The scientific basis for understanding the origin of earthquakes differs from that of volcanoes in light of the theory of plate tectonics.

(Explain your answer.)

.....

....

- What role do volcanoes play in changing the Earth's surface?

.....

.....

- What are the human casualties and environmental losses caused by volcanoes?

.....

.....

Change in the Earth's surface

The role of earthquakes

The role of earthquakes is shown in:

1-The appearance or submergence of some .....

2-The occurrence of landslides or .....

3-The occurrence of earth .....

4-The occurrence of ..... which changes the shape of .....

- Earthquake losses are divided into:

1-..... casualties including .....

2- Material losses such as.....

The role of volcanoes

The role of volcanoes is shown in:

1- The formation of ..... mountains such as the..... mountains in Saudi Arabia.

2- formation of.....and..... Plains

3- The disappearance of ..... and .....

4- Changing the course of .....

The Damages caused by volcanoes are divided into:

1- ..... casualties

2- ..... Losses

The role of meteorites

When meteorites fall to the Earth's surface, they cause ..... craters such as..... crater in United States and Mount Kamel crater in .....

- Scientists believe that meteorites caused the extinction of the dinosaurs.

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Using the school book and based on what you have studied, write down what the following refers to:

Continental drift	.....
Tectonic plates	.....
Divergent movement	.....
Convergent movement	.....
Transform movement	.....
Earthquakes	.....
Volcanoes	.....
Meteorites	.....

Home performance

- Explain what is meant by:

- Continental drift.
- The number of tectonic plate theory assumptions.

- Compare:

- Divergent movement, convergent movement, and transform movement.
- Earthquakes and volcanoes.

Weekly Assessment (.....)

Write what the following statements indicate:

1- A theory presented by the German scientist Wegener.

.....

2- The Earth's crust, in addition to the solid part of the upper mantle.

.....

3- The oceanic crust and the continental crust, which consist of solid plates of different shapes and sizes.

.....

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4- Plates composed of thin oceanic crust with high density and part of the upper mantle.

.....

5- Plates composed of thick crust and part of the upper mantle.

.....

6- A layer of molten rocks.

.....

7- The regions where tectonic plates diverge.

.....

8- The regions where tectonic plates move in a parallel manner.

.....

9- Rapid, successive, Natural tremors occurring in the Earth's crust.

.....

10-An opening in the Earth's crust that allows molten rocks and trapped gases to escape to the Earth's surface.

.....

11- Rock masses that penetrate the Earth's atmosphere.

.....

12- An advanced system whose function is to change the orbit of Meteorites

.....

Give reasons for the following:

1- Volcanoes change the features of the Earth's surface.

.....

2- Tsunamis occur on coasts.

.....

3- Formation of new volcanic island chains, such as the formation of the Japanese islands.

.....

4- Occurrence of the San Andreas Fault.

.....

5- The multiplicity of tectonic plate movements.

.....

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6- The Andes Mountains are longer than the Himalayas.

.....

7- Earthquakes and volcanoes cause major losses.

.....

8- The extinction of dinosaurs in ancient times before the existence of humans.

.....

Correct the following statements:

1- The theory of plate tectonics was proposed by Alfred Wegener.

.....

2- There are four types of plate tectonic movement.

.....

3- Convergent movement results in the formation of faults.

.....

4- Volcanoes cause landslides or landslips.

.....

5- The most common earthquakes are structural earthquakes.

.....

Lesson (2) Formation of minerals and soil Week .....

Class performance **Date:** / /

First: Minerals

- A mineral is ..... inorganic substance with a crystalline structure and a specific ..... composition
- Minerals are found in the form of ..... such as Sulphur, or in the form of ..... such as ..... (red iron oxide)





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Properties of metals:

Minerals have a number of properties:

1- Colour: Some have a definite (fixed) colour, as Sulphur……. colour, and some change depending on the type of ..... they contain.

2- Luster: (shining): Some minerals have a luster, such as ..... which was used by the ancient Egyptians to make..... (kohl)

3- Transparency: minerals are classified according to the degree of light transmission into opaque minerals such as ....., semi-transparent minerals such as ....., and transparent minerals such as …….

The origin of minerals:

Minerals originate from several sources, including

1- Solidification of .....

2- Crystallization of solutions from .....

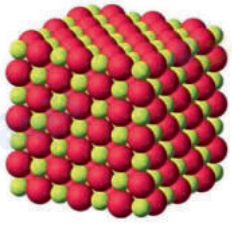
In light of what you have studied, explain the difference between the two images

What is the name of figure (A.....

What is the name of figure (B) .....



(B)



(A)

Why is (A) classified as a mineral, unlike (B) .....

Second: Soil

Soil is classified into several types according to how it was formed:

1-..... soil such as the ……soil of the Nile, which was transported from the Ethiopian plateau to Egypt over millions of years.

2-..... soil such as..... and ..... soil where both are formed by the weathering and decomposition of..... and ..... rocks

Using the school book and based on what you have studied, write down what the following refers to:

Mineral	.....
crystallization	.....
Soil	.....

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Home performance

Write the scientific term:

1- From the opaque minerals.

2- A mineral with luster that was used by the ancient Egyptians in making eye kohl.

3- The resources that can be obtained from the Earth's spheres (excluding the biosphere) and cannot be replenished once consumed.

Give reasons for the following:

1- There are many forms of minerals.

2- Sulfur mineral differs from hematite mineral.

3- Talc mineral is considered among the opaque minerals.

4- The properties of transported soil differ from Sedentary soil.

Correct the following statements:

1- Hematite mineral is violet in color.

2- Mica mineral is non-transparent.

3- Rocks are formed as a result of the solidification of volcanic magma.

4- Minerals and fossil fuels are considered types of renewable resources.

Weekly Assessment (.....)

Write what the following statements indicate:

1- A mineral from the transparent minerals. (.....)

2- A mineral from the semi-transparent minerals. (.....)

3- Natural inorganic solid substances with a crystalline structure and a definite chemical composition. (.....)

4- Soil that formed as a result of the slow weathering of rocks in the same place. (.....)

Give reasons for the following:

1- The formation of minerals in nature.

.....

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2- Opal is not considered a mineral despite having luster and a definite chemical composition.

.....

3- Minerals differ from each other in terms of transparency.

.....

4- The increase in consumption of non-renewable resources.

.....

5- The use of some minerals by the ancient Egyptians.

.....

6- The diversity of minerals formed from the solidification of magma.

.....

7- Transported soil differs in its chemical composition from the original rocks above which it lies.

.....

8- Minerals and fossil fuels are considered non-renewable resources.

.....

Correct the following statements:

1- Olivine is one of the minerals formed from silica-rich magma.

.....

2- Sulfur is the mineral that consists of table salt crystals.

.....

3- Quartz is among the minerals with definite (fixed) colors.

.....

4- Nile Delta soil in Egypt is Sedentary residual soil.

.....

5- Hydrothermal vents are formed near earthquake zones.

.....

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Various questions:

1- What are the results of increased human activity in the fields of mining and oil?

.....

2- What is meant by soil, and what does it consist of?

.....

3- Compare between transported soil and Sedentary soil (in terms of formation method and chemical composition).

P.O.C	Transported soil	Sedentary soil
Formation method		
Chemical composition		

Monthly Exercise (.....)

Correct the underlined statements:

1. Deficiency of **growth** hormone secretion causes an increase in blood glucose level. (.....)
2. **Cellulose** is considered a monosaccharide. (.....)
3. Proteins are composed of basic units called **fatty acids.** (.....)
4. Proteins are detected using **iodine** solution. (.....)
5. Chromoplasts are usually found in **plant leaves**. (.....)
6. **Carbon dioxide** is considered the main factor in Van Helmont's experiment for growth of willow tree. (.....)
7. **Hydrogen** gas is produced as a by-product of photosynthesis. (.....)
8. The cell that contains the largest number of mitochondria is usually **a skin cell**. (.....)
9. **Photosynthesis** reactions occur on the inner membrane of mitochondria. (.....)
10. **Gas exchange** is the process that includes both anabolism and catabolism. (.....)
11. One of the products of the second stage of cellular respiration is **pyruvic acid**. (.....)

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12. Scientist **Mendeleev** explained the continental drift hypothesis. (.....)
13. **The Red Sea formation** is an example of convergent plate movement. (.....)
14. Rock masses that penetrate the atmosphere and fall to Earth are called lava. (.....)
15. Hematite is composed of **sodium chloride**. (.....)
16. The process of transporting rock fragments away from their original place is called **deposition**. (.....)
17. The mineral used by Ancient Egyptians in making eye kohl is **opal**. (.....)
18. Soil is classified into transported soil and Sedentary soil according to **its fertility level.** (.....)

Write the scientific term:

1. Organic compounds composed of carbon, hydrogen, and oxygen and considered a source of energy. (.....)
2. A type of sugar consisting of two monosaccharide units with one water molecule removed. (.....)
3. The simplest form of carbohydrates for example are glucose and fructose. (.....)
4. Organic substances having the same composition as carbohydrates and provide the body with larger amounts of energy. (.....)
5. Organic chemical compounds whose main sources are butter, eggs, milk, meat, many nuts, and vegetable oils. (.....)
6. Chemical compounds composed of basic units soluble in water called amino acids. (.....)
7. Cell organelles found in the green parts of plants and green algae. (.....)
8. A process in which plants use sunlight to produce their own food. (.....)
9. Vessels that allow water and mineral salts to move from the roots to the rest of the plant. (.....)
10. One part of the chloroplast that is composed of structural units called thylakoids. (.....)

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11. Chemical reactions that do not depend on light and occur in the stroma.
(.....)
12. A vital process in which oxygen and carbon dioxide gases are exchanged with the surrounding environment. (.....)
13. A solution that loses its color in the absence of oxygen from the surrounding medium. (.....)
14. The membrane where reactions occur producing the largest amount of energy.
(.....)
15. Natural openings in plant leaves through which they obtain atmospheric oxygen needed for respiration. (.....)
16. A newly developed technology that simulates suitable conditions for agriculture to perform photosynthesis in multi-story buildings. (.....)
17. Processes that consume energy in building a large complex molecule from many simple molecules. (.....)
18. Processes that release energy in breaking down a large molecule previously built into simpler molecules. (.....)
19. A device that provides accurate data about metabolic rate at rest, helping in effective planning of diet and exercise to manage body weight more successfully and sustainably. (.....)
20. Natural rapid successive vibrations that occur in the Earth's crust.
(.....)
21. The layer formed from the fusion of the Earth's crust and the solid part of the upper mantle. (.....)
22. Naturally inorganic solid substances with crystalline structure and definite chemical composition. (.....)
23. Soil formed as a result of slow weathering of rocks in the same place.
(.....)

Give reasons for the following:

1. Glucose is one of the simplest forms of carbohydrates.
.....
2. Starch is considered a polysaccharide.
.....
3. The sweet taste of some fruits such as grapes and apples.
.....

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4. The body can fast for several hours without food.

.....

5. White light is considered a compound light.

.....

6. Transparent green chlorophyll solution absorbs red and blue colors.

.....

7. Glucose is stored in plant parts in the form of starch granules.

.....

8. The stroma is considered a suitable site for completing light independent reactions.

.....

9. Vertical farming is considered a solution to the problem of limited agricultural land.

.....

10. The inner mitochondrial membrane contains folds that increase its surface area.

.....

11. The number of mitochondria increases inside liver and muscle cells.

.....

12. Cellular respiration stages do not occur effectively in the absence of oxygen.

.....

13. The characteristics of transported soil differ from sedentary soil.

.....

14. Cellular respiration is considered a break down process.

.....

15. Photosynthesis is considered a building up process.

.....

16. The formation of El-Kamel crater in the Western Desert.

.....

17. The oceanic plate subducts (slides) under the continental plate at convergence.

.....

18. Volcanoes are considered among the phenomena that affect the Earth's surface.

.....

19. Long faults are formed in the Earth such as the San Andreas fault.

.....

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20. Sulfur and quartz minerals can be distinguished in terms of color.

.....

21. Mica is classified as a translucent mineral.

.....

22. The erosion process is related to the weathering process.

.....

23. Nile Delta soil is considered an example of transported soil.

.....

What happens in the following cases?

1. Eating excessive amounts of carbohydrates beyond the body's need.

.....

2. Decreased secretion of insulin hormone secreted by the pancreas.

.....

3. Adding drops of yellowish-brown iodine solution to the inner part of a potato tuber.

.....

4. Adding drops of Biuret solution to an animal protein.

.....

5. Excessive intake of dietary supplements rich in amino acids.

.....

6. Adding Sudan IV solution to food rich in fats.

.....

7. Extension of the edges of some thylakoid discs in one granum to meet the edges of a disc in another granum.

.....

8. Removal of grana from the chloroplast.

.....

9. Failure to store glucose in the form of starch.

.....

10. Passing carbon dioxide gas through soda lime and sodium hydroxide solution.

.....

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11. Disappearance of cristae from the inner membrane of mitochondria.

.....

12. Placing a plant in a dark place.

.....

13. Increase in temperature above 20°C on the rate of photosynthesis.

.....

14. Removal of enzymes from the mitochondrial matrix.

.....

15. Rupture of the outer mitochondrial membrane.

.....

16. Tectonic plates moving side by side in opposite directions.

.....

17. Strong earthquakes occurring in a certain area.

.....

18. Magma eruption from inside the Earth to the surface.

.....

19. Spread of volcanic ash in the environment.

.....

20. Change in the amount of impurities in quartz mineral.

.....

21. Light falling on talc mineral.

.....

22. Recycling of minerals.

.....

23. Rocks not being exposed to any type of weathering

.....

What is meant by the following:

1. Nutrition chemistry.

.....

2. Carbohydrates.

.....

3. Monosaccharides.

.....

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4. Disaccharides.
.....
5.Fats.
.....
6. Cholesterol.
.....
7. Proteins.
.....
8.Light dependent reactions.
.....
9. Light independent reactions.
.....
10.Chlorophyll.
.....
11. Photosynthesis.
.....
12.Enzymes.
.....
13.Chloroplasts.
.....
12. Mitochondria.
.....
15. Gas exchange in plants.
.....
16. Cellular respiration.
.....
17.Mitochondrial matrix.
.....
18.Vertical farming.
.....
19. Anabolic processes.
.....
20.Catabolic processes.
.....
21.Volcanoes.
.....
22. Meteorites.
.....
23. River soil.
.....
24. Mechanical weathering.
.....
25. Non-renewable resources.
.....

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Compare between:

1. The color of Benedict's solution with high and low concentrations of glucose.

P.O.C	Hight concentrations of glucose	Low concentrations of glucose
Color of Benedict's solution		

2. Cellular respiration and gas exchange in plants.

P.O.C	Cellular respiration	Gas exchange

3. Photosynthesis and respiration in plants (in terms of: time of occurrence – sites of occurrence in the cell – overall reaction equation).

P.O.C	Photosynthesis	respiration
Time of occurrence		
Sites of occurrence in the cell		
Overall reaction equation		

4. Anabolic and catabolic processes (in terms of: definition – energy – example).

P.O.C	Anabolic Processes	Catabolic Processes
definition		
energy		
example		

5. The Himalayas and the Andes mountains (in terms of: cause of formation).

P.O.C	Nile Delta	Mariont Soil
Cause of formation		

6. Oceanic plates and continental plates (in terms of: composition).

P.O.C	Oceanic plates	Continental plates
Oceanic plates Composition		

7. Calcite and pyroxene (in terms of: origin).

P.O.C	Calcite	Pyroxene
Origin		

8. Nile Delta soil and Mariout soil (in terms of: type).

P.O.C	Nile Delta	Mariont Soil
Type		

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Mention one importance for each of the following:

1. Benedict's solution.

.....

2.Iodine solution.

.....

3.Pancreas.

.....

4. Carbohydrates.

.....

5.Proteins.

.....

6.Fats.

.....

7. Grana.

.....

8.Leaf stomata.

.....

9-Metabolic rate analyzer device.

.....

10.Anabolic processes.

.....

11.Catabolic processes.

.....

Explain how to detect the presence of each of the following:

1. Glucose sugar.

.....

2.Starch.

.....

3.Proteins.

.....

4.Fats.

.....

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5.Chlorophyll pigment in chloroplasts.

.....

6.Starch in the green parts of variegated leaves.

.....

Express with chemical equations the following, writing conditions if it is found:

1. Photosynthesis process.

.....

2. Cellular respiration process.

.....

Answer the following questions:

1. Why does cholesterol pose a great danger to human health?

.....

2. Photosynthesis depends on several factors. Mention two of them.

.....

3. Mention one diference between the first and second stages of cellular respiration.

.....

4. What is the theory that explains the origin of earthquakes and volcanoes?

.....

5. Mention some predictions made by geologists as a result of the continuous movement of tectonic plates.

.....

6. Mention three results of volcanoes that contribute to changing the Earth's surface.

.....

7. Suggest some solutions to achieve sustainability of non-renewable resources and reduce their depletion.

.....

8. Classify the following processes to anabolic processes or catabolic processes:

- Wound healing. (.....)
- Conversion of amino acids into proteins (.....)
- Cellular respiration (.....)
- Conversion of fats into energy. (.....)

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Test (1)

Answer the following questions:

Question One:

1. Complete the following sentences:

a. Some minerals have a luster similar to metals such as the _____ mineral

b. The rock masses that penetrate the Earth's atmosphere are called _____.

2. Give the scientific reason:

a. Atmospheric pressure affects the melting and boiling points of water.

.....

b. The rate of evaporation increases when temperature rises.

.....

c. The heater is placed on the floor of the room.

.....

d. Snakes are able to catch their preys at night.

.....

Question Two:

Write the scientific term:

a. The movement of tectonic plates parallel (side by side).

b. An organ in the plant where cellular respiration takes place.

What happens if:

a. A substance in one of its states gains thermal energy.

.....

b. A substance changes from gaseous state to solid state without passing through the liquid state.

.....

c. A zinc plate is placed in copper sulfate solution.

.....

d. Benedict's solution is added to glucose sugar

.....

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Question Three:

1- Correct the following statements:

a. Rocks are natural solid inorganic materials with a crystalline structure and a definite chemical composition.

b. The mineral mica is non-transparent.

2- Mention one importance for each of the following:

a. Infrared rays.

.....

b. Carbohydrates.

.....

c. Stroma.

.....

d. DART

.....

Question Four:

1- Choose the correct answer:

a. The material in which the forces of attraction are very strong is _____.

a. Iron b. Water c. Air d. Oil

b. Among the materials with low thermal conductivity is _____.

a. Iron b. Aluminum c. Copper d. Wood

2- Compare between:

a. Divergent movement – Convergent movement of tectonic plates.

.....

b. Melting process – Boiling process.

.....

c. Physical change – Chemical change.

.....

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Test (2)

Answer the following questions:

Question One:

A – Choose the correct answer:

1- When heating a piece of iron, all of the following increase except _____.

a. number of molecules b. temperature

c. internal energy of molecules d. Kinetic energy of molecules

2- A cup of orange juice with a temperature of (25°C) was filled with ice cubes. After (5 minutes) the cup's temperature became (9°C), and the temperature of the remaining ice cubes was _____ °C.

a. 25 b. 0 c. 9 d. 12

B – Give reasons:

1- Wet clothes dry faster during the day with sunlight than at night.

.....

2- Difficulty in breaking a piece of rock.

.....

3- The number of mitochondria increases in some cells such as liver cells.

.....

4- It is preferable to express a chemical reaction with a symbolic equation rather than a word one.

.....

Question Two:

A – Complete the following sentences:

1- The _____ change results in new substances that differ in properties from the original materials.

2- Magma rich in silica forms, upon solidification, minerals such as mica and _____.

B – Mention the importance of each of the following:

1- The double membrane in the chloroplast. .....

2- Carbohydrates in industry. .....

3-Sensory receptors in the head of the snake. .....

4- Radiator. .....

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Question Three:

A – Balance the following equations:

1- $Fe + O_2 \longrightarrow Fe_2O_3$

2- $Al + H_2SO_4 \longrightarrow Al_2(SO_4)_3 + H_2$

B – What are the results of:

1- Removal of grana from chloroplasts.

.....

2- Convergence of two oceanic tectonic plates.

.....

3- Heating solid iodine.

.....

Question Four:

A – Give the chemical name for each of the following:

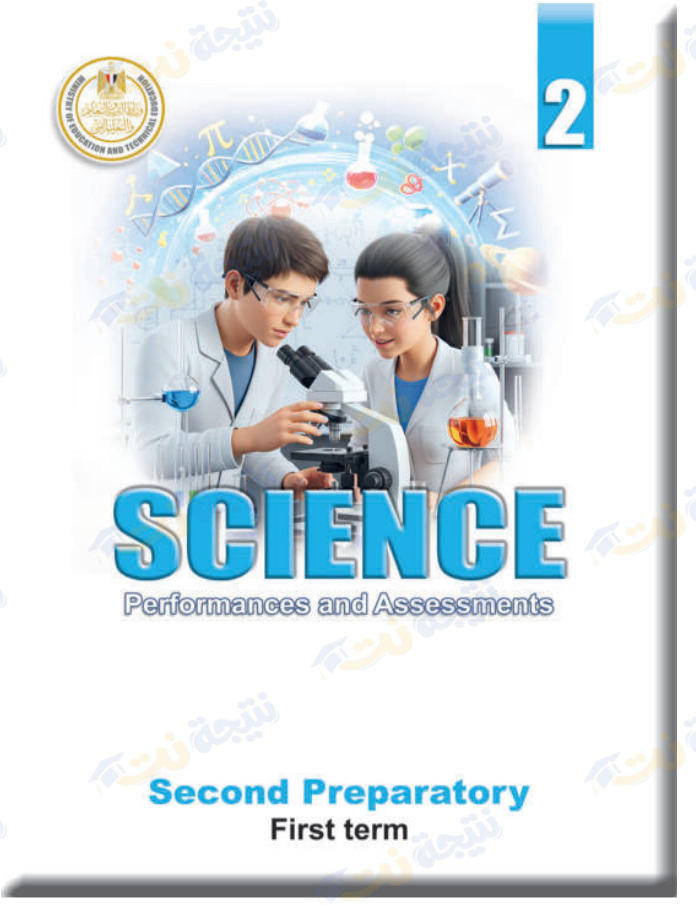
1- Vinegar. .....

2- Baking soda. .....

B – What is meant by each of the following:

1. Divergent movement. .....
2. Mineral. .....
3. Stroma. .....
4. Gas exchange in plants. .....

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