6 Science

Quarter 1

PIVOT 4A LEARNER'S MATERIAL

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Science

Grade 6

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PIVOT 4A CALABARZON

Guide in Using PIVOT Learner's Material

For the Parents/Guardian

This module aims to assist you, dear parents, guardians, or siblings of the learners, to understand how materials and activities are used in the new normal. It is designed to provide the information, activities, and new learning that learners need to work on.

Activities presented in this module are based on the Most Essential Learning Competencies (MELCs) in Science as prescribed by the Department of Education.

Further, this learning resource hopes to engage the learners in guided and independent learning activities at their own pace and time. Furthermore, this also aims to help learners acquire the needed 21st century skills while taking into consideration their needs and circumstances.

You are expected to assist the child in the tasks and ensure the learner's mastery of the subject matter. Be reminded that **learners have to answer all the activities in their own notebook**.

For the Learners

The module is designed to suit your needs and interests using the IDEA instructional process. This will help you attain the prescribed grade-level knowledge, skills, attitude, and values at your own pace outside the normal classroom setting.

The module is composed of different types of activities that are arranged according to graduated levels of difficulty—from simple to complex. You are expected to **answer all activities on separate sheets of paper** and submit the outputs to your respective teachers on the time and date agreed upon.

PARTS OF PIVOT LEARNER'S MATERIAL

	Parts of the LM	Description
Introduction	What I need to know	The teacher utilizes appropriate strategies in presenting the MELC and desired learning outcomes for the day or week, purpose of the lesson, core content and relevant samples. This allows teachers to maximize learners awareness of their own knowledge as regards content and skills required for the lesson.
	What is new	
Development	What I know	The teacher presents activities, tasks , contents of value and interest to the learners. This shall expose the learners on what he/she knew, what he /she does not know and what she/he wanted to know and learn. Most of the activities and tasks must simply and directly revolved around the concepts to develop and master the skills or the MELC.
	What is in	
	What is it	
Engagement	What is more	The teacher allows the learners to be engaged in various tasks and opportunities in building their KSA's to meaningfully connect their learnings after doing the tasks in the D. This part exposes the learner to real life situations /tasks that shall ignite his/ her interests to meet the expectation, make their performance satisfactory or produce a product or performance which lead him/ her to understand fully the skills and concepts .
	What I can do	
	What else I can do	
Assimilation	What I have learned	The teacher brings the learners to a process where they shall demonstrate ideas, interpretation, mindset or values and create pieces of information that will form part of their knowledge in reflecting, relating or using it effectively in any situation or context. This part encourages learners in creating conceptual structures giving them the avenue to integrate new and old learnings.
	What I can achieve	

Weeks 1-4

I Mixtures and Their Characteristics

This lesson deals with mixtures and their characteristics. The activities in this lesson are arranged chronologically to help you develop the necessary knowledge and skills to master the most essential learning competencies in Science 6.

In this lesson, you will be doing learning tasks that will help you describe the appearance and uses of homogenous and heterogenous mixtures.

The different materials around you vary depending on their composition. Some of them appear in their pure form while others are combinations of simpler materials. **Mixture** is a combination of two or more substances present in varied proportion. The gloves, face masks and disinfectant solution are some of the examples of mixtures because they were made using the combination of different materials. Examine Fig. 1 below.

Figure. 1. Halo-halo

Halo-halo is an example of a mixture. A mixture is a substance made by mixing other substances together. When two or more elements or compounds mix together, not necessarily in a definite ratio and do not interact chemically, then the resulting substance is known as a mixture. In Figure 1, can you identify the components or ingredients that were combined to make halo-halo? What are these materials?

In this kind of mixture, you can distinguish some pieces of corn, banana, beans and other materials that make up the mixture in halo-halo. The mixed materials can be classified depending on the appearance of the resulting mixture. Each of the combined/mixed materials can be identified or distinguished from one another. This kind of mixture is called heterogenous mixture. Each property of the materials in heterogenous mixtures do not change.

Types of Mixture

There are two types of mixtures. One is **homogenous mixture** which contains substances that are evenly mixed and is uniform throughout in terms of physical appearance. The other one is **heterogeneous mixture** which contains component substances that are usually easy to distinguish. Examine the pictures in Figure 2. Can you identify the materials that make up these mixtures?

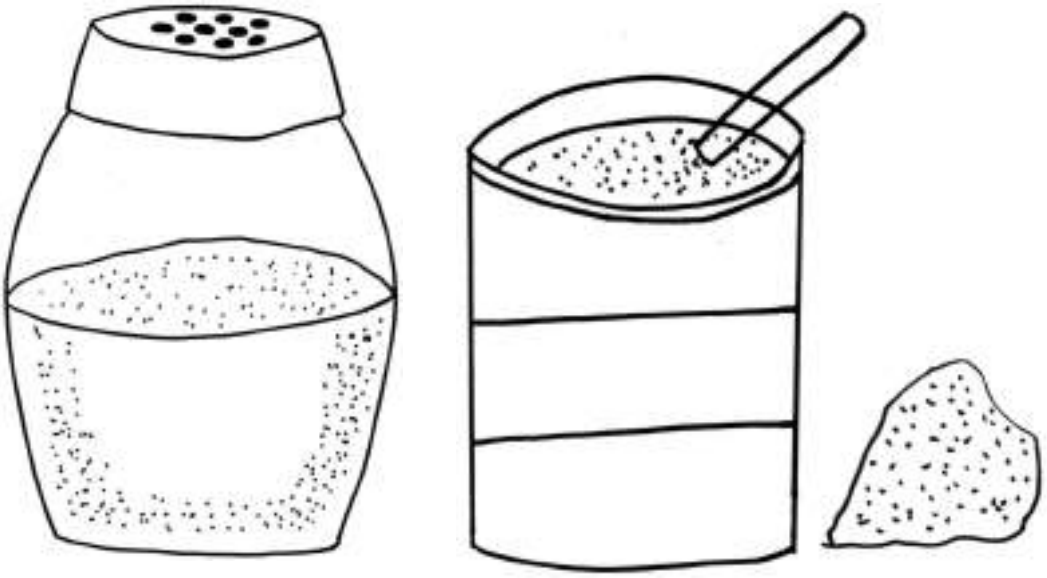


Figure 2. Two types of mixtures show heterogenous (salt and pepper) and homogenous mixtures (detergent soap/powder)

Homogeneous mixtures have uniform composition where the substances are evenly mixed. They are also called **solution**. In its component, the substance that dissolves or seems to disappear is called a **solute** while the one that dissolves is the **solvent**.

Most of the time, the formation of this kind of mixture is associated with the process of dissolving. We say soluble if the solid solute completely dissolved in the liquid solvent and insoluble if it is not. While if the components are both liquid, the term miscible or immiscible is used.

Salt dissolves in water. Salt is the solute, and water is the solvent. This property of solutes is called **solubility.** It is measured in the amount of solute that can dissolve in a fixed amount of solvent. **Air** is an example of gaseous solution. **Metal alloys** are examples of solutions in the solid phase. **Ammonia water** is a liquid solution made up of ammonia gas dissolved in water. Ammonia gas is the solute and water is the solvent.

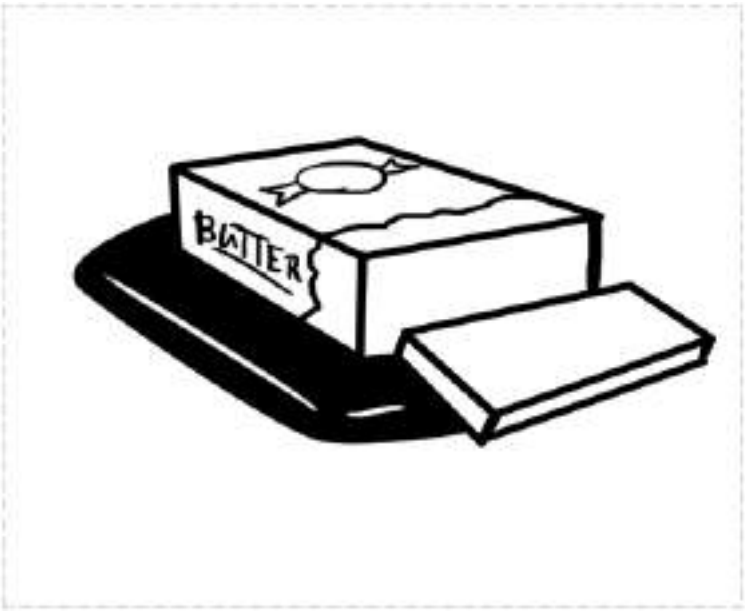


Figure 3. Butter is a solid homogenous mixture

In **homogenous mixtures**, like in vinegar, the dissolving components mixed are uniformly distributed throughout the mixture or are the same throughout. The components cannot be identified in a solution of homogenous mixtures. Butter (Figure 3) is an example of homogenous mixture commonly found at home. When you take any part of the mixture, you will get the same kind of material in any part. It is a solid homogenous mixtures.

Types of Homogenous Mixtures

There are three types of homogenous mixtures. These are (1) solid homogenous mixtures, (2) liquid homogenous mixtures and (3) gaseous homogenous mixtures.

An example of solid homogenous mixtures include Bitumen which is a mixture of complex hydrocarbon chemicals . It is the solid form of petroleum and source of gasoline, diesel and other fossil fuels. Do you know that cement is a solid homogenous mixtures of calcium compounds? This is the source of building materials for construction. It is mixed with sand, gravel and water to become concrete. Other examples of solid homogenous mixtures include coins, plastics, and woods.

Liquid homogenous mixtures, are indeed those needed to power your body. Blood plasma, the colorless fluids that holds blood cells in suspension make up more than half of the volume of human blood. Milk is a homogenous colloid. Colloids are mixtures of tiny, insoluble droplets floating in a solvent. By visual appearance, milk is a homogenous liquid suspension of fats in water. Another example of liquid homogenous mixtures include wine and liquors. It is a combination of ethanol and/or water as a solvent on various substances. The universal solvent itself, the water, is a liquid homogenous mixture. Except for distilled water, all water contain dissolved minerals and gases which are dissolved throughout the water. The mixtures present in the same phase make water homogenous in nature. The liquid detergents are another examples of homogenous mixtures of various soaps and chemicals.

- Homogenous mixtures also appeared in gaseous state. This includes the air that we breath. Air is a mixture of oxygen, nitrogen, argon, carbon dioxide and other elements in smaller units. The glowing trademark seen that are created as neon signs are mixtures of elemental gases and homogenous gaseous mixtures.

Refer to Fig. 4. below. Can you identify which of the homogenous mixtures are in solid, liquid and in gaseous state?

Figure 4. The man spraying fertilizers in plants

Study the two figures (Fig. 5) below and tell whether which of them is an illustration of a homogeneous or heterogeneous mixtures.

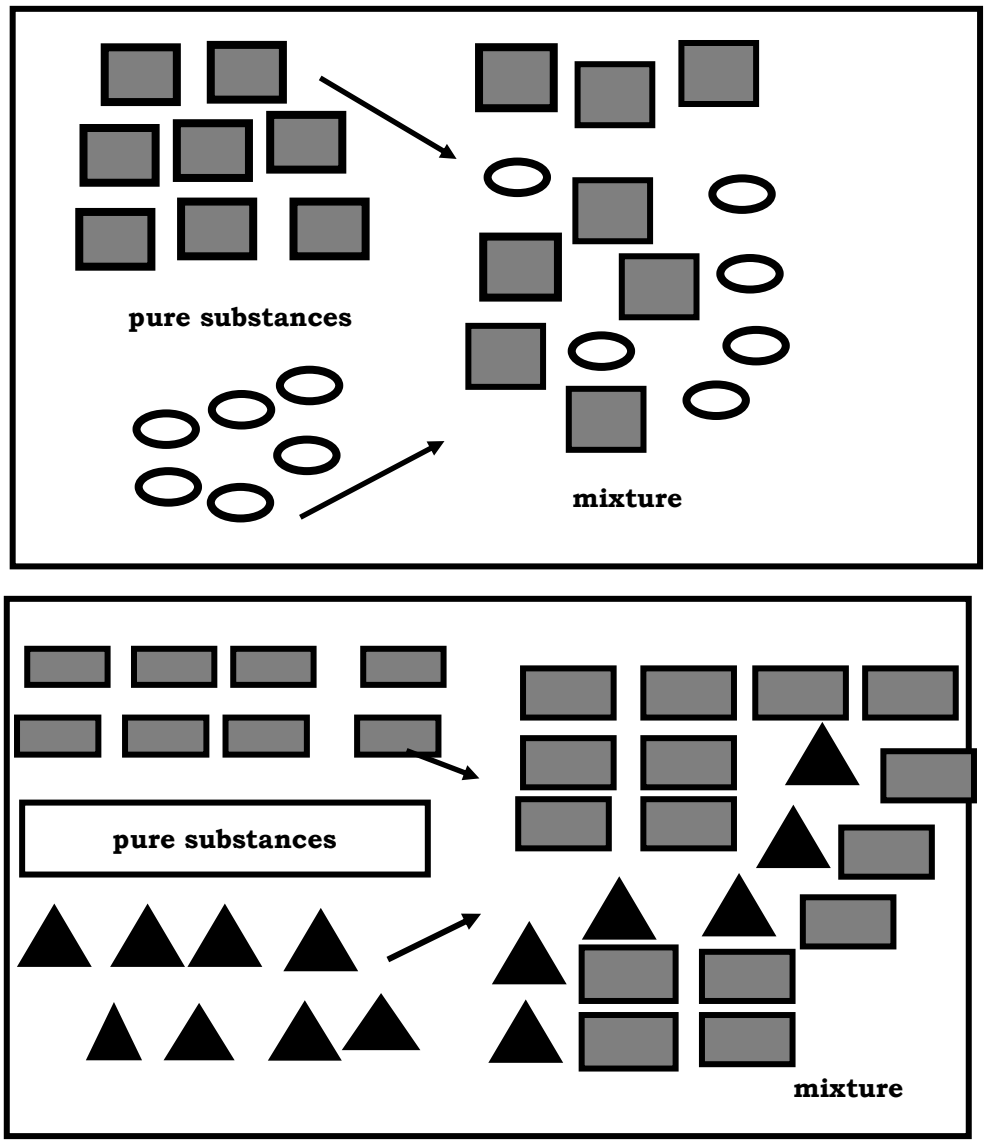


Figure 5. Basic Structure of Mixtures

Most of the time, the type of mixture can be distinguished by looking at its physical appearance. In Figure 5, the basic structure of homogenous mixture is visibly the same in composition of its substances. In heterogeneous mixtures, components have different compositions and are not uniform throughout in terms of the appearance making them easy to identify. They are also called non-uniform mixtures. Heterogeneous mixtures can be a suspension or a colloid. In suspension, the dispersed particles do not fully dissolve in the liquid but instead they settle in the solution. In colloids, dispersed particles do not settle because it is light enough to stay dispersed in the dispersal medium. Below is a comparison of the different kind of mixtures.

In **heterogeneous or non-uniform mixtures,** mixtures can be natural or man-made. Much of the food we eat are heterogeneous mixtures. Fried rice, chopsuey, pinakbet and fruit salad are some examples. We mix ingredients that go well together. Suspensions and colloids are the two forms of heterogeneous mixtures.

In **suspensions,** the dispersed ingredient's particles are not really dissolved in the liquid. It later settles at the bottom of the container. It needs to be stirred to keep the concentration of the suspension consistent. Its particles are larger than those of a solution and a colloid.

It appears cloudy and its particles are retained on filter paper. The suspended particles are called the **dispersed particles** while the continuous phase is the **suspension medium.** The dispersed particles in a suspension are larger than those in solutions and in colloids.

The particles in a suspension are larger than 100 nanometers. The large particle size in a suspension causes the phases of a suspension to separate upon standing. Hence, the solid particles of the milk of magnesia settled to the bottom after some time. Some examples of suspension include oil mixed in water, muddy water, cream and milk.

To sum it up, solution appears to be transparent . The light passes through with no scattering from solute particles which are molecule in size. It is homogeneous and does not settle out nor cannot be filtered but can be separated using the process of distillation.

A suspension like the mixture of sand and water , is cloudy and heterogeneous. Its particles are larger than 10,000 Angstroms which allows them to be filtered. Allowing the suspension to stand makes the particles to separate out from its components.

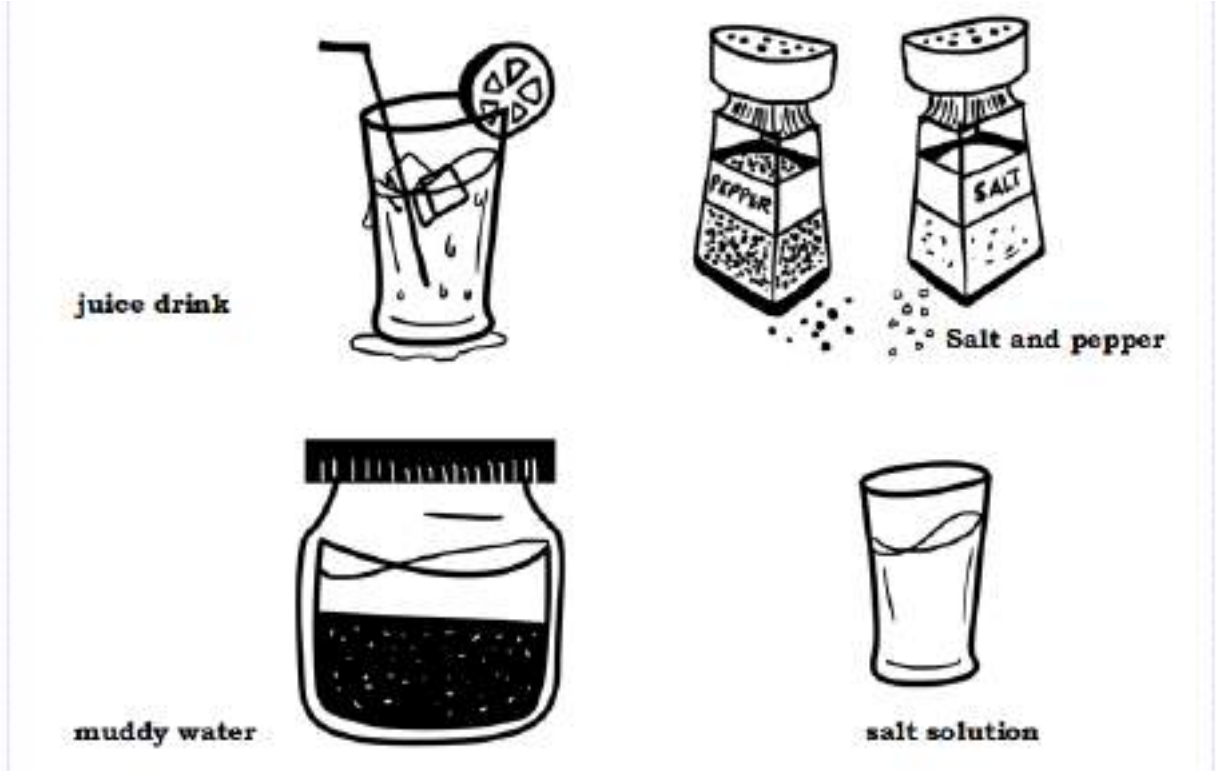
A colloid is intermediate between a solution and a suspension. While a suspension will separate out, a colloid will not. Colloids can be distinguished from solutions using the Tyndall effect. Light passing through a colloidal dispersion, such as smoky or foggy air, will be reflected by the larger particles and the light beam will be visible.

The common materials found at home like soy sauce and sardines are contained in a solid container which is a mixture of different substances making up the bottle and tin can, respectively. The soy sauce is a homogenous liquid mixture specifically, a solution. While the sauce of the sardines which appears to be uniformly distributed is a colloid.

To summarize on the characteristics of homogenous and heterogenous mixtures, study the chart given below.

Types of Mixtures		
Type	**Characteristics**	**Examples**
Homogeneous	• It has a uniform composition. • The particles of the mixture are not visible by the naked eye. • The particles cannot be separated by filtration. • The mixtures are stable (the particles do not settle down). • The path of a beam of light is not visible in the mixture.	• mixture of sugar in water • mixture of salt in water • air • sweet tea • orange juice
Heterogenous	• It has a non-uniform composition. • The particles are visible by the naked eye. • The particles can be separated by filtration. • The mixtures are unstable (the particles settle down). • The path of a beam of light is visible in the mixture.	• mixture of salt and sand • mixture of oil and water • fruit salad • milk and cereals • pizza

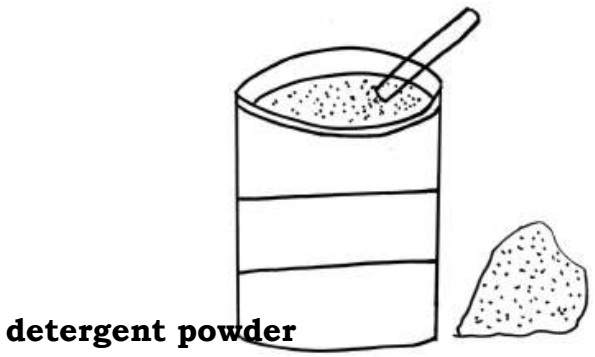
Can you identify which of the following materials shown in the pictures are homogenous? Which materials are heterogenous?



Examine the chart below. This table shows the type of solutions at different phases of the materials.

Types of Solutions		
Type of Solution	**Mixture**	**Solute**
liquid	soft drink	carbon dioxide (gas)
solid	bronze	tin (solid)
gas	air	oxygen (gas)
liquid	ammonia water	ammonia (gas)
solid	amalgam	silver (solid)

Can you identify the type of mixtures in the materials as shown in the pictures below?



detergent powder

rice grains

detergent powder

powdered juice

The chart presented in the table shows the comparison of the properties of solutions, colloids and suspension . This will help you determine the appearance of the mixtures.

Colloids can be classified further according to the methods based on the needed applications such as (1) physical state of the dispersion medium and dispersed phase, or (2) the type of interaction between the dispersion medium and dispersed phase, or (3) based on the particle types in the dispersed phase. Thus, based on the dispersion medium and the dispersed phase, colloids are classified as: (1) aerosol, (2) solid aerosol, (3) foam, (4) sol, (5) solid foam, (6) gel, (7) emulsion and (8) solid sol. The chart below gives examples of the different classification of colloid.

Examples of Colloid

Dispersion Medium	**Dispersed phase**	**Colloidal Name**	**Example**
gas	liquid	aerosol	Fog
gas	solid	solid aerosol	Smoke
liquid	gas	foam	whipped cream, soap foam or suds
liquid	liquid	emulsion	salad dressing
liquid	solid	sol	paint, blood, pigmented ink, mud
solid	gas	solid foam	cake
solid	liquid	gel	jelly
solid	solid	solid sol	colored glass

To help you understand the classifications of colloid, let us review some terms that might help you.

Aerosol– is a substance enclosed under pressure and able to release as a fine spray by mean of a propellant gas

Emulsion are fine dispersion of minute droplets of one liquid in another in which it is not soluble or miscible. When two or more immiscible liquids are mixed, they form a water-in-oil emulsion, in this case, water is the dispersed phase and oil is the continuous phase

Foam- ais a colloid in which the particles are gas bubbles and the medium is liquid

Sol– is a colloid made out of very small solid particles in a continuous medium

The chart below shows the comparison of the properties of homogenous mixture. This will help you determine the appearance of the mixtures.

Comparison of the Properties of Solution, Colloid, and Suspension			
Property	Solution	Colloid	Suspension
particle size	less than 1 nm	1 to 100 nm	more than 100 nm
appearance	clear	cloudy	cloudy
separation	does not separate	does not separate	separates or settles
filterability	passes through the filter paper	passes through the filter paper	particles do not pass through filter paper
effect of beam of light	light can pass through	scatters light	light cannot pass through
example	salt solution, soy sauce, vinegar	mayonnaise, smoke, milk	muddy water

Mixtures are found to be very useful in our daily lives. They are present abundantly in nature or in natural occurrences. Others are formed by combining the different materials to make a necessary or important materials in our daily activities.

The appearance and properties of mixtures are considered in determining their uses and in making them useful at home and in the community.

You are now familiar with the appearance and uses of homogenous and heterogenous mixtures, are you ready to do the learning task now? Goodluck in your journey as a Grade 6 Scientist!

I

Learning Task No. 1: Study the given sample materials**.** Identify the type of mixtures for each sample.

1. coffee and cream dissolved in water
2. milk solution
3. mixed toys in the room
4. paper clips and pins
5. soy sauce
6. halo-halo
7. gravel and sand
8. buco salad
9. juice drinks
10. iodized salt and pepper

D

Learning Task 2: Determine the changes that will happen in the materials when mixed together. Copy the chart below in your notebook.

Part A. With the assistance of your family members, prepare the materials as presented in the table below.

Steps:

1. Mix the pair of materials (one spoon each) and place them in separate containers for you to easily compare and observe them.
2. Describe the appearance of the resulting mixtures by checking the appropriate column in the table below.

Materials	Visible	Not Visible	Uniform	Non-Uniform	State of Matter
1. Sugar and water					
2. Oil and water					
3. Vinegar and water					
4. Salt and pepper					
5. leaf and water					

1. Which mixture/s is/are uniform in appearance? Why?
2. Which mixture/s is/are non-uniform in appearance? Why?

Part B. . Using the same materials you used in part A, observe the mixtures if after sometime, the solute materials will be visible or settled down. Complete the table below for your observation. Copy and complete the table in your notebook.

Mixtures	Materials visible or settled down	Materials that did not settle down or materials that dissolve
1. sugar and water		
2. oil and water		
3. vinegar and water		
4. salt and pepper		
5. leaf and water		

Based on your data in part A and B, answer the following questions.

1. Which mixtures are homogeneous?
2. Describe the appearance of a homogeneous mixture?
3. Which mixtures are heterogeneous?
4. Describe the appearance of a heterogeneous mixture?

Learning Task 3: Read the characteristics of mixtures given in the second column. Identify if it is **homogeneous** or **heterogeneous** mixture. Place a check mark under the column. Copy your answer in your notebook.

Heterogeneous Mixture	Characteristics	Homogeneous Mixture
	1. Components can be separated by physical means.	
	2. The additive component is so finely dispersed in the main ingredient such that it can't be seen.	
	3. Particles are uniformly distributed	
	4. The substances are identified in different phases.	
	5. Particles are non-uniformly distributed.	

E

Learning Task 4: Study the mixtures below and classify whether it is a solution, suspension or colloid. Write them in the appropriate column.

1. oil and water		7. sugar and water
2. sand and water	5. mayonnaise	8. flour and water
3. salt and water	6. paint	9. toothpaste
4. milk		10. body lotion

Suspension	Colloid	Solution

Learning Task 5 Study the materials inside the box. Choose two materials and combine them to make either heterogeneous or homogeneous mixtures.

leaves		buttons
vinegar	pasta	spaghetti sauce
salt	soil	food coloring
water		sugar

Homogeneous	**Heterogeneous**
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

A

Learning Task 6 : Choose the letter of the best answer. Write the letter of the correct answer on a separate sheet of paper.

1. Mixed nuts, halo-halo and buko salad are examples of what kind of mixture?

A. gas
B. heterogeneous
C. homogeneous
D. liquid

2. What do you call the combination of two or more substances present in varied proportion where each materials are distinct and visibly seen by naked eyes?

A. compound
B. cream
C. mixture
D. water

3. Which of the following is an example of heterogeneous mixture?

A. corn oil
B. water and salt
C. water and sand
D. water and sugar

4. Which of the following best describes colloids?

A. clear, flawless substance
B. clear, pure substance
C. dark, black substance
D. sticky, creamy substance

For numbers 5-6, choose from the given choices below:

I. Air II. Fruit salad III. Salt solution IV. Pizza

5. Which of the folowing materail(s) are homogenous mixture(s)?

A. I and II
B. I only
C. I and III
D. II and IV

6. Which of the folowing materail(s) are hetegenous mixture(s)?

A. I and II
B. I only
C. I and III
D. II and IV

For numbers 7-8 , choose from the given choices below.

I. Colloid II. Suspension III. Solution IV. Salt and pepper

7. Which is TRUE about homogenous mixture?

A. I, II, and III
B. I and II only
C. All of the above
D. IV only

8. Which is TRUE about heterogenous mixture?
   A. I, II, and III
   B. I and II only
   C. All of the above
   D. IV only

9. Which of the following materials **DOES NOT BELONG** to the group?
   A. salt and pepper
   B. coins and pins
   C. mayonnaise
   D. cereals with milk

10. This material(s) is/are BEST described as having the same appearance.
   I. Homogenous
   II. Uniform
   III. Non-uniform
   IV. Heterogenous

   A. I and II B. I and IV C. B and III D. II and IV

Separating Mixtures

Lesson

I

Weeks

5-8

You have learned that mixtures can either be homogenous or heterogenous depending on their appearance and the composition of materials. In this lesson you are expected to demonstrate understanding of the different techniques in separating mixtures such as decantation, evaporation, filtering, sieving and using magnet.

Examine Figure 1 below. There are ways by which mixtures must be separated to make them available and help us in our daily activities. What are some benefits that we can derive from the different mixtures around us? In what ways can these mixtures be separated to make them useful in our daily life?

Figure 1. Methods of separating mixtures

In Figure 1, it shows that heat is use to cook rice. There are times that rice quality is affected by the presence of some tiny stones or plant parts mixed together. In practice, **handpicking** will separate the tiny stones such that the rice grains would be more safe to consume.

The **use of magnet** is useful in mining iron and in many process industries to remove metal contaminants from product streams. In our community, waste are segregated for the utilization of biodegradable and non-biodegradable materials. Separating mixtures remove unwanted materials, thus making these materials available for utilizing them for different purposes.

Can you identify some techniques in separating mixtures? In what ways can you separate the different mixtures found at home as illustrated in Figure 2 below? This lesson will help you to learn more! Happy learning!

Figure 2. The different sample of materials at home

In particular, some mixtures need separating techniques to be able to recover the needed materials. The method of separating the substance that make up mixture depends on the physical properties of the mixed materials or substances.

A mixture of solute and solvent may be allowed to stand to let the undissolved substance to settle at the bottom of the container. Then the liquid may be poured slowly to leave the solid particles. This method is known as **decantation.** Other materials that can be separated by this method are oil and water, and the mixture of kerosene and water. Fig. 3 shows sample of liquid for decantation.

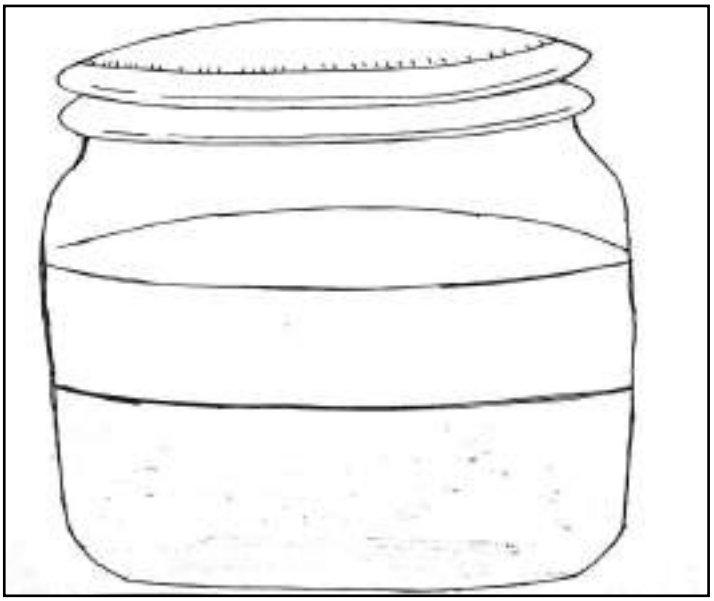


Figure 3.
Sample liquid for decantation

Another way of separating mixtures is by **evaporation.** Applying heat will cause the liquid in a mixture to evaporate leaving the other component/ substance behind.

Evaporation is a technique used to separate homogeneous mixtures where there is one or more dissolved substance. The method drives off the liquid components from the solid components.

The process typically involves heating the **mixture** until liquid evaporates into water vapor. There are many ways by which evaporation take place in our community or at home.

The drying of wet clothes under the heat of the sun is caused by the evaporation of water molecules, thus caused the drying of clothes . The cooling of hot milk or tea was caused by the evaporation of hot molecules on the surface, thus it becomes just enough for drinking.

When cooking rice or heating foods, evaporation takes place that caused changes in the materials. Be cautious when cooking, extreme heat will cause immediate evaporation of liquid in materials, and if left unattended, this will cause fire. (Figure 4).

Figure 4.
Heating causes water molecules to evaporate

Have you seen your mother brewed coffee in a coffee maker and then passed the coffee and water in a filter?

This aromatic coffee is separated from its granules by filtration. **Filtration** is the process of separating an insoluble solid from the liquid substance by allowing the liquid to pass through a porous material as seen in Figure 5.

The porous material is usually a filter paper. The method of separation applies only to suspensions because solute and colloidal particles are too small to be retained on the filter paper. In this process, the filter paper allows the liquid to pass through it and retains the solid particles. The solid is called the **residue**, while the liquid is called the filtrate.

Figure 5. Separating mixture by filtration

In a mixture of grains of sand in water, the grains of sand cannot pass through the cheesecloth. Grains of sand separates from the water when it passes through the cheesecloth. This method of separating mixtures is called **filtration.** In filtration, solutions or gases pass through the filter but particles which cannot fit through the filter are trapped by it. An example of this is to filter a mixture of pepper and water. In the laboratory, filtration is carried out using filter paper but we also use filtration at home like when tea strainers, face mask and food strainer are used. In common language, when a sieve (salaan) is used, this method is known as **sieving (Fig. 6)**. An example of this is when coconut milk is separated from the grated coconut meat.

Smaller particles when mixed with other materials tend to settle at the bottom leaving the larger materials in a strainer. Another example of sieving is when a strainer is used to separate gravel and sand in a construction site . The sand will pass through easily the strainer, and the gravel left in the sieve.

At home, cooked pasta is separated from water by using a strainer. In the kitchen or in a bathroom, you will see some pieces of materials or hairs trapped in strainer. This will prevent hairs and other waste materials to clog in the sink or in the drainage .

Figure 6. Separating mixture by sieving

Separating mixture by using a **magnet** maybe used to separate mixtures when one of its components is magnetic like iron filings and small nails. Mechanical separation involves the use of tools such as magnets, forceps and sieves to separate solids that are mixed together. The magnetic material is attracted by the magnet, leaving the non-magnetic material behind. The substances that are not soluble and mixed with solutes maybe separated by **sieving or filtration**.

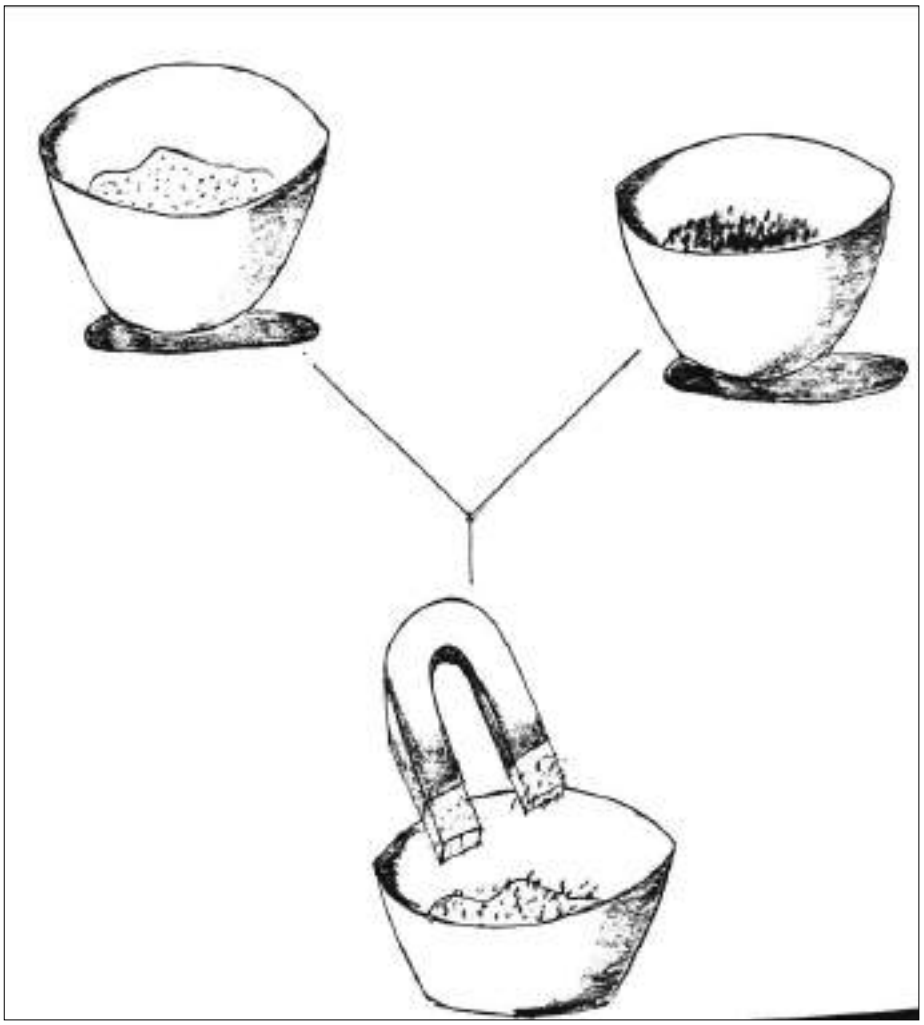


Figure 7. Separating mixtures by using a magnet

The use of magnet to separate metal materials as illustrated in Fig. 7 is useful in mining iron as iron is attracted to a magnet. In many industries, this method of separating mixtures is economical and environmentally sound practice as this method remove metal contaminants from product stream.

Separating mixtures are very helpful at home. Depending on the appearance of the materials and their uses, mixtures are separated . The chart below tells about the benefits of mixtures and the methods by which they are separated.

Separating common mixtures in the community	
Benefits	Explanation
Have a drinking water	Filtration and evaporation are the methods by which water treatment is done to separate some impurities and makes it potable for drinking.
Segregation of non-biodegradable to biodegradable wastes	Waste management enables the separation of biodegradable from non-biodegradable waste. Recyclable materials can be source of income from others.
Separating mixtures in mining gold copper and other materials	By filtration, miners can separate those minerals from rocks.
Cleaning of oil spills	Oil and water can be separated given the knowledge of their properties.
Constructing houses and buildings	Sieving, or separating rocks on sand can be separated which is essential in building infrastructure and houses.

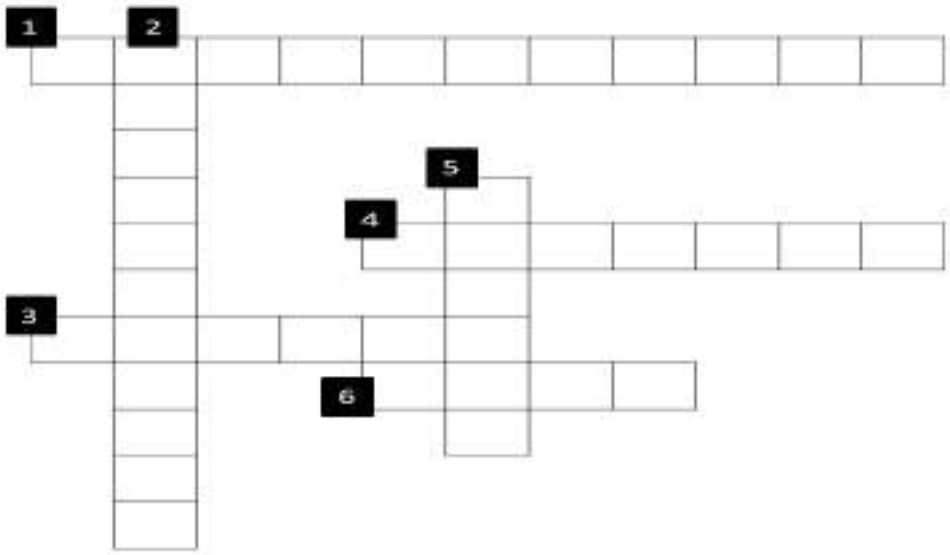
I

Learning Task 1: Identify the method by which the given mixtures will be separated. Choose the letter of the correct answer inside the box. Write the letter on a separate sheet of paper.

1. water in cloth
2. needle and flour
3. salt solution
4. muddy water
5. pebbles and water
6. oil and water
7. boiled pasta
8. rice grains and rice chaffs
9. pins and wooden clips
10. water turning into steam

Decantation	sieving	filtration	evaporation	use of magnet

Learning Task 2: Read the statements below and complete the cross-word puzzle.



Across

1. It is a method used to separate particulates from a liquid by allowing the solids to settle at the bottom of the mixture.
3. A tool to separate iron fillings and paper clips.
4. A method in which two or more components of different sizes are separated from a mixture on the basis of the difference in their sizes.
6. This is what you apply during the separation of mixtures using evaporation.

Down

2. It is a method that will cause the liquid in a mixture to evaporate leaving the other component/substance behind.
5. A tool to separate the pebbles and water.

D

Learning Task 3: With the assistance of your family members, read the procedures below. Perform what is being asked in each task.

Materials needed	Procedure	Observation Observe what happen?	Technique in separating mixtures
1 cup of water, 1/2 cup of sand, cheesecloth 2 container	1. Mix the water and the sand. 2. Pass the mixture through a cheese-cloth.		
Wet rug Wooden table	1. Scrub the table using a wet cloth or rug 2. Observe what happened to the moist on table after 3 to 5 minutes		
3 tablespoon of rice grain, 4 tablespoon of flour, plate, container sieve/ strainer	1. Mix 3 tablespoon of rice grains and 4 tablespoon of flour in a plate 2. Sift /sieve the mix-ture		
1 cup of sand, 3 cups of water, small container	1. Mix 1 cup of sand to 3 cup s of water in a container. 2. Pour the water from the glass.		
Nails, coin, small rocks, magnet	1. Mix the nail, coins and small rocks. 2. Use of magnet to separate the mixture		

Guide Questions:

1. What are the techniques in separating mixtures?
2. What are examples of mixtures that can be separated through decanta-tion, filtration, sieving, evaporation and using magnet?

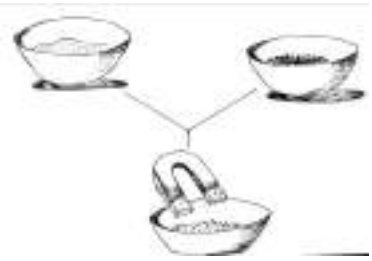
Learning Task 4: Draw activities observed in your community where techniques in separating mixtures (decantation, evaporation, filtration, sieving and using magnet) are observed.

Techniques in Separating Mixtures	**Example of activities done at home or in the community**
a. Decantation	1.
b. Evaporation	2.
c. Filtration	3.
d. Sieving	4.
e. Using Magnet	5.

Learning Task 5: Identify the method of separating mixtures in the given pictures below.

1. 

2. 

3. 

4. 

5. 

E

Learning Task No. 6: Identify common separation techniques used to separate the components of the following mixtures..

Mixtures	**Technique to Separate the Mixture**
1. Getting the liquid portion of iced coffee	
2. Straining pancit canton in a colander	
3. Separating pasta off cup noodles	
4. Window screens allowing air in while keeping insects out	
5. Making coffee using ground coffee beans	
6.Drying clothes (separating water from fabric)	
7. Recovering the pure alcohol from alcoholic beverages	
8. Separating minute metal shards from a sandy floor	
9. separating grains from husk	
10. Separating crashed lem-ons in a lemonade	

Learning Task 7: Write the letter in Column B that corresponds to the statements in column A. Write your answer in your notebook.

Column A	Column B
1.It is used to separate particulates from a liquid by allowing the solids to settle to the bottom of the mixture.	A. decantation
2. A method in which two or more components of different sizes are separated from a mixture on the basis of the difference in their sizes.	B. evaporation
3.It is done by passing a suspension through a filter paper retains the solid components of the mixture.	C. filtration
4. It is applying heat to cause the liquid in a mixture to evaporate leaving the other component/substance behind.	D. sieving
5. It is the separation that involves the use of tools to separate metal solids mixed together.	E. using a magnet

Learning Task No. 8.

1. Recall some experiences from your home and/or in your community which you have found to be significant in separating mixtures.
2. Write a simple paragraph describing your reflection on it.

I understand that_____.

I realized that _____.

Learning Task 9: Choose the letter of the best answer. Write the chosen letter on a separate sheet of paper.

1. The insoluble substance from a liquid mixture was separated whereby a liquid passes through the holes in a filter paper. The solid particles are left behind. What method of separating mixture is used?
   A. decantation C. filtration
   B. evaporation D. using magnet

2. A method of separating excess liquid from food by heating.
   A. decantation C. filtration
   B. evaporation D. using magnet

3. Which of the following mixture can be separated by decantation?
   A. soy sauce and salt C. water and oil
   B. soy sauce and vinegar D. water and flour

4. To separate rocks into different sized particles for road building and other construction projects, which technique is applicable?
   A. condensation C. sieving
   B. evaporation D. using magnet

5. Which of these is NOT a technique in separating a mixture?
   A. decantation C. filtration
   B. dissolving D. Filtration

6. Which of the following statement is correct about separating mixture through a filter?
   A. The liquid passes through sieve but the solid particles are left behind.
   B. Insoluble substances from a liquid can be separated by using a filter.
   C. The liquid cannot passed in a filter.
   D. All of the above

7. What is the process by which water is separated by heating?
   A. decantation C. filtration
   B. evaporation D. sieving

8. What is the best technique in separating mixture of metals from other junk?
   A. aided by magnets C. filtration
   B. evaporation D. Sieving

Answer Key

Weeks 1-4

Learning Task No. 1:

1. homogenous
2. Homogenous
3. Heterogenous
4. Heterogenous
5. Homogenous
6. Heterogenous
7. Heterogenous
8. Heterogenous
9. Homogenous
10. heterogenous

Learning Task No. 2: Part A

Materials	Visible	Not Visible	Uniform	Non-Uniform	State of Matter
1. Sugar and water		/	/		liquid
2. Oil and water	/			/	liquid
3. Vinegar and water		/		/	
4. Salt and pepper	/			/	
5. Leaf and water	/			/	

Guide Questions: Learning Task No. 2 Part A

1. sugar and water; vinegar and water-they are uniformly or evenly distributed.
2. Oil and water; salt and pepper,; leaf and water– they are not uniformly distributed; they are distinct and visible

Learning Task N. 2. Part B

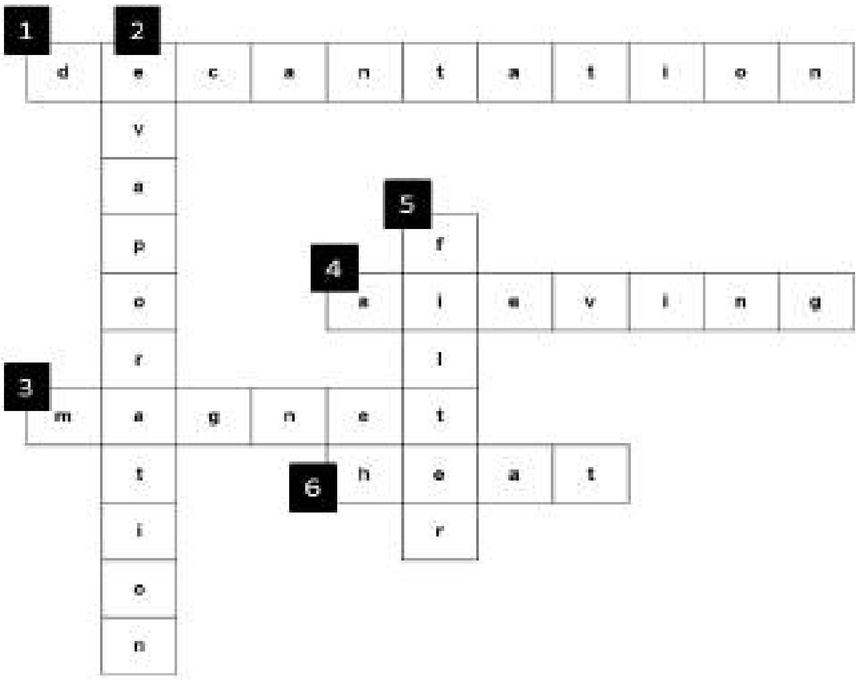
Mixtures	Materials visible or settled down	Materials that did not settle down or materials that dissolve
1. Sugar and water		Sugar and water
2. Oil and water	oil	
3. Vinegar and water		vinegar
4. salt and pepper		Salt and pepper
5. leaf and water	leaf	

Learning Task No. 3

1. heterogenous mixture /
2. Homogenous mixture /
3. Homogenous mixture /
4. Heterogenous mixture /
5. Heterogenous mixture /

Learning Task No. 4

Suspension	Colloid	Solution
1. oil and water 2. sand and water 8. flour and water	4. milk 5. mayonnaise 6. paint 9. toothpaste 10. body lotion	3. salt and water 7. sugar and water



Learning Task No. 2

1. Evaporation	6. decantation
2. Using a magnet	7. sieving
3. Filtration	8. winnowing
4. Filtration	9. use of magnet
5. Decantation	10. evaporation

Learning Task No. 1

1. B	6. D
2. C	7. A
3. C	8. D
4. D	9. C
5. C	10. A

Learning Task No. 6

Weeks 5-8

Homogeneous Mixture	Heterogeneous Mixture
salt and water sugar and water food coloring and water food coloring and vinegar vinegar and salt vinegar and sugar	buttons, pasta and leaves - can be mix to all of the given materials to make heterogeneous mixture

Learning Task No. 5

Learning Task No. 3

Guide Questions:

1. Methods of separating mixtures: decantation, sieving, filtration, sieving, using magnet
2. Decantation– sand and water (pouring water out from the glass of sand and water mixture)

   Sieving—sand and water

   Sieving– rice grains and flour

Materials needed	Procedure	Observation Observe what happen?	Technique in separating mixtures
1 cup of water, 1/2 cup of sand, cheesecloth 2 container	1. Mix the water and the sand. 2. Pass the mixture through a cheesecloth.	Sand separated from water.	sieving
Wet rug Wooden table	1. Scrub the table using a wet cloth or rug 2. Observe what happened to the moist on table after 3 to 5 minutes	The wood table became dry.	evaporation
3 tablespoon of rice grain, 4 tablespoon of flour, plate, container sieve/strainer	1. Mix 3 tablespoon of rice grains and 4 tablespoon of flour in a plate 2. Sift /sieve the mixture	The rice grains were left in the strainer. The flour passed through the strainer.	sieving
1 cup of sand, 3 cups of water, small container	1. Mix 1 cup of sand to 3 cup s of water in a container. 2. Pour the water from the glass.	The water poured out form the container. The sand were left in the container.	Decantation
Nails, coin, small rocks, magnet	1. Mix the nail, coins and small rocks. 2. Use of magnet to separate the mixture	The nails and coins were magnetized but not the small rocks.	Use of magnet

Learning Task No. 3

Answers may vary depending on the kind of mixtures available at home.

Learning Task No. 4:

Answer may vary depending on the available materials at home and in the community.

Learning Task No. 5:

1. Evaporation
2. Filtration
3. use of magnet
4. decantation
5. sieving

Learning Task No. 6:

Mixtures	Techniques to Separate the Mixture
1. Getting the liquid portion of iced coffee	decantation
2. Straining pancit canton in a colander	sieving
3. Separating pasta off cup noodles	sieving
4. Window screens allowing air in while keeping insects out	sieving
5. Making coffee using ground coffee beans	filtration
6.Drying clothes (separating water from fabric)	evaporation
7. Recovering the pure alcohol from alcoholic beverages	filtration
8. Separating minute metal shards from a sandy floor	Use of magnet
9. separating grains from husk	winnowing
10. Separating crashed lemons in a lemonade	decantation

Learning Task No. 7

1. C
2. D
3. C
4. B
5. E

Learning Task No. 8

Answer may vary depending on the experiences of the learner.

Learning Task No. 9:

1. C
2. B
3. C
4. C
5. B
6. B
7. B
8. A

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