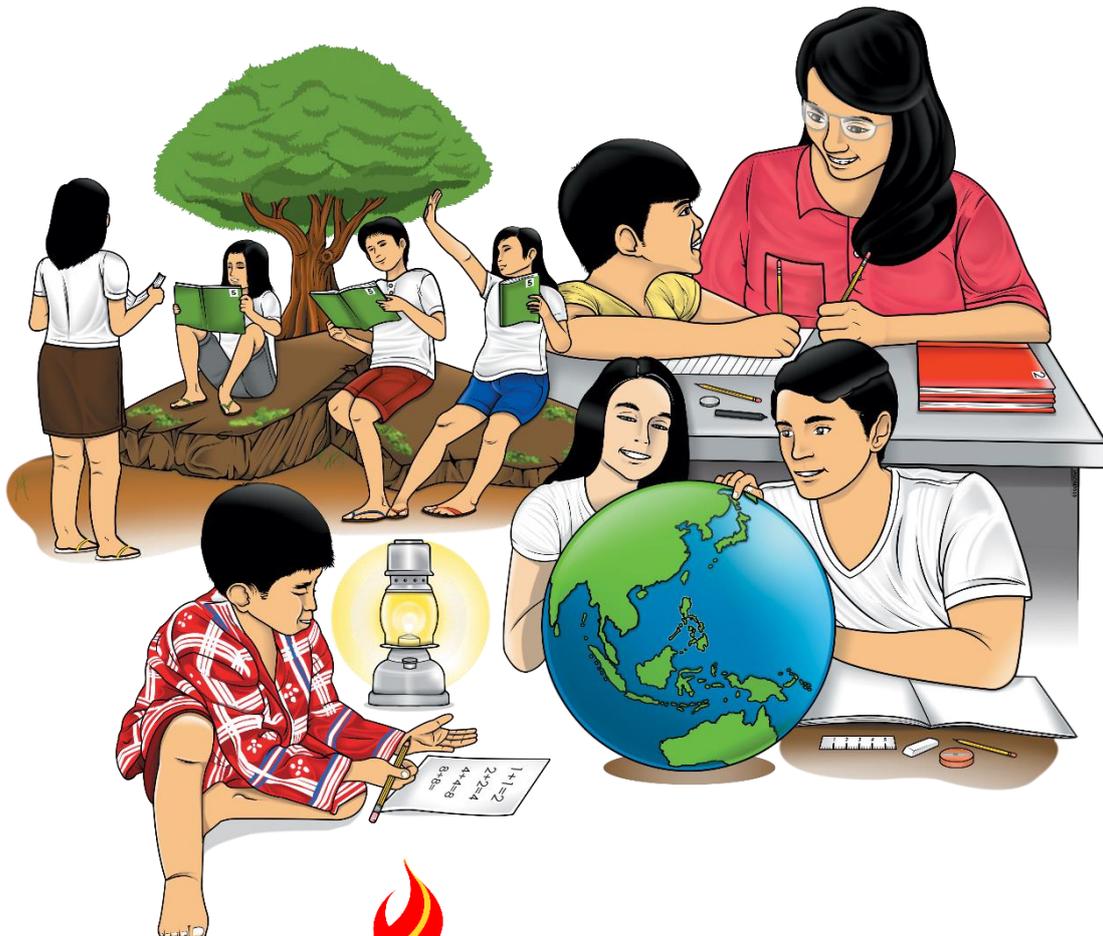


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# Science

## Quarter 1 – Module 1

### Lesson 4: Solutions and Their Characteristics



**Science – Grade 6**  
**Alternative Delivery Mode**  
**Quarter 1 – Module 1 Lesson 4: Solutions and Their Characteristics**  
**First Edition, 2020**

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Published by the Department of Education  
Secretary: Leonor Magtolis Briones  
Undersecretary: Diosdado M. San Antonio

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Printed in the Philippines by \_\_\_\_\_

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# **Science**

**Quarter 1 – Module 1**

**Lesson 4: Solutions and Their  
Characteristics**

# **Introductory Message**

For the facilitator:

Welcome to the Science Grade 6 Alternative Delivery Mode (ADM) Module on Solutions and Their Characteristics.

This module was collaboratively designed, developed and reviewed by educators both from public and private institutions to assist you, the teacher or facilitator in helping the learners meet the standards set by the K to 12 Curriculum while overcoming their personal, social, and economic constraints in schooling.

This learning resource hopes to engage the learners into 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.

As a facilitator, you are expected to orient the learners on how to use this module. You also need to keep track of the learners' progress while allowing them to manage their own learning. Furthermore, you are expected to encourage and assist the learners as they do the tasks included in the module.

For the learner:

Welcome to the Science Grade 6 Alternative Delivery Mode (ADM) Module on Solutions and Their Characteristics.

This module was designed to provide you with fun and meaningful opportunities for guided and independent learning at your own pace and time. You will be enabled to process the contents of the learning resource while being an active learner.

This module has the following parts and corresponding icons:



***What I Need to Know***

This part will be your guide to learn in the specific lessons specifically your skills and competencies.



***What I Know***

This contains a 10-item pre-test that will check what you already know.



***What's In***

In this section, you will be given review questions or exercises that connect your previous lesson to the new one.



***What's New***

It is in this part that the new lesson will be introduced to you in different ways: a story, a poem, a problem opener, an activity, or a situation.



***What is It***

This portion will give you the topic, information and concepts as a brief discussion for you to learn. You will be also be given specific instructions on how to go about the lesson.



***What's More***

This provides you questions and exercises to help you deepen your understanding and find practical applications of the concept.



***What I Have Learned***

This includes a short fill-in the blanks summary of the topic. It is in this part that helps you generalize your understanding of the concepts.



### ***What I Can Do***

This section includes an activity or exercises that will help you apply your knowledge into real-life situations.



### ***Assessment***

This is composed of a 10-item exercises for you develop your mastery of the topic to and to assess if you have attained the learning competency.



### ***Additional Activities***

This part will be the last activity for you to enhance your skill of the lesson learned. It will give you step by step instructions to follow.



### ***Answer Key***

This contains answers to all activities in the module.

At the end of this module you will also find:

### ***References***

This is a list of all sources used in developing this module

The following are some reminders in using this module:

1. Use the module with care. Do not put unnecessary mark/s on any part of the module. Use a separate sheet of paper in answering the exercises.
2. Don't forget to answer *What I Know* before moving on to the other activities included in the module.
3. Read the instruction carefully before doing each task.
4. Observe honesty and integrity in doing the tasks and checking your answers.
5. Finish the task at hand before proceeding to the next.
6. Return this module to your teacher/facilitator once you are through with it.

If you encounter any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator. Always bear in mind that you are not alone.

We hope that through this material, you will experience meaningful learning and gain deep understanding of the relevant competencies. You can do it!



## ***What I Need to Know***

This module was designed and written with you in mind. It is here to help you master the matter. The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the module you are now using.

The module is about:

- the appearance and uses of solutions.

After going through this module, you are expected to be able to:

- describe the appearance and uses of solutions.



## ***What I Know***

A. For numbers 1-5 choose the letter of the correct answer. Write your answer using your Science journal or notebook.

1. What is the universal solvent?
  - a. water
  - b. vinegar
  - c. acetone
  - d. soy sauce
  
2. What is a solution?
  - a. It is a homogeneous mixture in which particles are evenly distributed.
  - b. It is a heterogeneous mixture in which particles are evenly distributed
  - c. It has a larger particle that is visible to the naked eyes.
  - d. It has a particle that settle out when left undisturbed
  
3. What is being dissolved in a solution?
  - a. solute
  - b. solvent
  - c. precipitate
  - c. water
  
4. The \_\_\_\_\_ is the one doing the dissolving.
  - a. solute
  - b. solvent
  - c. precipitate
  - c. water
  
5. The amount of solute that can be dissolved by the solvent is defined as \_\_\_\_\_.
  - a. solubility
  - b. saturated
  - c. unsaturated
  - d. supersaturated

B. For numbers 6-10 write TRUE if the statement is correct and FALSE if not.

6. Particles in a solution are not visible to the naked eye?
7. A solution may exist in any phase.
8. Air is an example of gaseous solution.
9. A solution consists of a heterogeneous mixture.
10. A simple solution is basically two substances that are evenly mixed together.

**Lesson**  
**4**

# **Solutions and Their Characteristics**

Most of the household materials found at home like soda, vinegar and wine are examples of solution. A solution might exist in liquid, solid or gas depending on the state of its solvent. Air is an example of gaseous solution, and its solvent is nitrogen gas. Steel is a solid solution. Its solvent is iron and the solute is carbon. Vinegar is a solution that forms from acetic acid and water. These are a few examples of solutions we encounter every day.



## ***What's In***

Identify the solvent and the solute in the following mixtures. Answer it using a separate sheet of paper.

1. cold ice tea \_\_\_\_\_ + \_\_\_\_\_
2. hot coffee \_\_\_\_\_ + \_\_\_\_\_
3. saltwater \_\_\_\_\_ + \_\_\_\_\_
4. carbonated beverages \_\_\_\_\_ + \_\_\_\_\_
5. lemonade \_\_\_\_\_ + \_\_\_\_\_
6. wine \_\_\_\_\_ + \_\_\_\_\_
7. steel \_\_\_\_\_ + \_\_\_\_\_
8. detergent solution \_\_\_\_\_ + \_\_\_\_\_
9. orange juice \_\_\_\_\_ + \_\_\_\_\_
10. vinegar \_\_\_\_\_ + \_\_\_\_\_

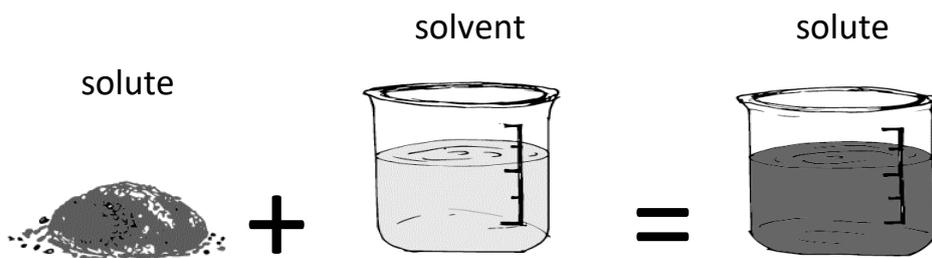


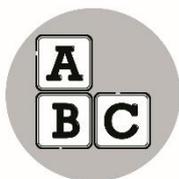


## ***What is It***

A solution is a homogeneous mixture of one or more solutes dissolved in a solvent. There are many kinds of solutions. It exists in any phase. Note, that the solute is a substance that dissolved in the solvent. For example, in a saline solution, salt is the solute dissolved in water as the solvent. Any two substances which can be evenly mixed may form a solution. Even if it is made of different phases if the result exists of a single phase, it is a solution.

The solution particles cannot be seen by our naked eye. It does not allow beams of light to scatter. And the solute from a solution cannot be separated by filtration (or mechanically). The picture below shows the components of solution.





## *What's More*

Activity 1. Look at the words in the box. Choose and combine two or more words to form a solution. Write your answer using your Science journal or notebook.

water	sugar	salt	carbon dioxide
gas	acetic acid	copper	Zinc
	silver	mercury	

1.
2.
3.
4.
5.

Activity 2. How do you describe a solution? List down your answers on your notebook.

- 1.
- 2.
- 3.
- 4.
- 5.



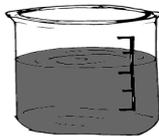
## ***What I Have Learned***

Create a sort of infomercial featuring a solution you created or designed.  
Say a few statements about it.



## ***What I Can Do***

1. Based on the illustration below, describe what a solution is.
2. How does solution appear?



A mixture of blue  
lemonade powder and  
water



## **Assessment**

Choose the letter of the correct answer. Do it in your Science journal or notebook.

1. What type of mixture is a solution?
  - a. Heterogeneous
  - b. Homogeneous
  - c. Immiscible
  - d. Miscible
  
2. Which of the following is not a characteristic of a solution?
  - a. It is a uniform mixture
  - b. It will scatter a beam of light
  - c. It is stable over time
  - d. The solute and solvent cannot be distinguished by the naked eye
  
3. What is the substance that is being dissolved in a solution?
  - a. Solute
  - b. Mixture
  - c. Solvent
  - d. Concentrator
  
4. What is the substance that dissolves the other substance in a solution?
  - a. Solute
  - b. Mixture
  - c. Solvent
  - d. Concentrator
  
5. In a salt water solution, what substance is considered the solvent?
  - a. Salt
  - b. Water
  - c. Both are solvents
  - d. Neither substance is a solvent

6. What is NOT an example of a solution?
- a. Acetic acid and water
  - b. soil and water
  - b. Sugar and water
  - c. iron and carbon
7. Which of the following is an example of a solid solution?
- a. Carbonated water
  - c. Oil and water
  - b. Steel
  - d. toothpaste
8. Which of the following is an example of a gas solution?
- a. Air
  - c. carbon dioxide
  - b. Oxygen
  - d. brass
9. Which of the following will dissolve in water?
- a. Oil
  - c. gasoline
  - b. Salt
  - d. sand
10. Which of these will not form a solution?
- a. preparing syrup
  - c. ice and water
  - b. preparing a cup of coffee
  - d. stirring of sugar in water



## ***Additional Activities***

Do the following and list down your answer using your Science journal or notebook.

1. Prepare a beverage using powdered juice and observe its appearance.
2. List down what you observed in the mixture.



# Answer Key

<p><b>What's New</b> -Answers may vary: Water + powdered juice + salt + sugar + baking soda + calamansi juice</p> <p><b>-Solution</b> <b>-One phase</b></p>	<p><b>What's In</b> 1. cold water/water + tea powder 2. water + coffee 3. water + salt 4. carbon dioxide + water 5. water + lemon juice 6. alcohol + water 7. iron + carbon 8. detergent + water 9. water + orange juice 10. acetic acid + water</p>	<p><b>What I Know</b></p> <ol style="list-style-type: none"> <li>a</li> <li>a</li> <li>a</li> <li>b</li> <li>a</li> <li>True</li> <li>True</li> <li>True</li> <li>False</li> <li>True</li> </ol>
<p><b>Assessment</b></p> <ol style="list-style-type: none"> <li>b</li> <li>b</li> <li>a</li> <li>c</li> <li>b</li> <li>b</li> <li>b</li> <li>a</li> <li>b</li> <li>a</li> </ol>	<p><b>What I can do</b> A solution is a homogeneous mixture of one or more solutes dissolved in a solvent.</p>	<p><b>What's More</b></p> <p><b>Activity 1</b></p> <ol style="list-style-type: none"> <li>Water &amp; sugar</li> <li>Water &amp; salt</li> <li>Copper &amp; zinc</li> <li>Silver &amp; mercury</li> <li>Acetic acid &amp; water</li> </ol> <p><b>Activity 2</b></p> <ol style="list-style-type: none"> <li>A solution is a homogeneous mixture.</li> <li>It exists in any phase.</li> <li>The solution particles cannot be seen by our naked eye.</li> <li>It does not allow beams of light to scatter.</li> <li>And the solute from a solution cannot be separated by filtration (or mechanically).</li> </ol>

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