

MIXTURES & SOLUTIONS

A person wearing a white lab coat and gloves is performing a chemistry experiment. They are holding a small glass beaker filled with white powder. A spoon is held above a graduated cylinder, which contains a green liquid. The person is about to add the powder to the liquid. A metal rod is inserted into the graduated cylinder. The background is a blurred laboratory setting.

**For
Special
Ed**

ENGAGING, HANDS-ON CHEMISTRY ACCESSIBLE TO ALL LEARNERS

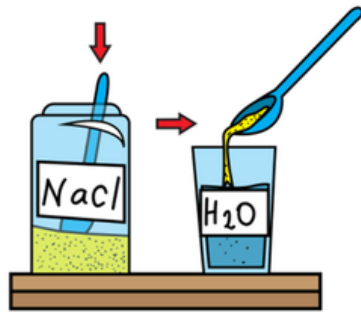


For students who:

- are emerging or non-readers
- take alternate assessments
- are in special education
- short-attention span
- lack pre-requisite skills
- benefit from the use of pictures for support
- middle/high school

Mixtures and Solution Unit

By
Christa Joy
Special Needs for Special Kids



Christa Joy, Special Needs for Special Kids
The Picture Communication Symbols ©1981-2018 by Tobii Dynavox. All Rights Reserved
Worldwide. Used with permission. Boardmaker® is a trademark of Tobii Dynavox

Table of Contents

Pages	Activity
4-5	Vocabulary board
6-20	Bingo cards
21-26	Mixture, Solution, Suspension task cards
27-31	Vocabulary cards
32-43	Vocabulary cut and paste
44-50	Circle maps
51-55	Identify Solute or Solvent
56-59	Dilute or concentrated
60-63	Does it dissolve?
64-67	Heterogeneous Homogeneous sorting
68-70	Mixture, solution, suspension chart
71-74	Unsaturated, saturated, supersaturated
75-102	Experiments
103-108	Cloze worksheets
109-119	Assessment
120-121	Terms of Use

Also included in this resource as separate files:

- Lesson plans
- Links and directions to digital activities
- PowerPoint (this is the book in the lesson plans)
- Voice recorded PowerPoint
- Activities in black and white

This unit contains 15 days of material. There is a detailed lesson plan to help you make the most of everything in this unit, including how to add some group activities.

It comes in 2 separate files. One in color and one in black and white.

Mixtures and Solutions

Lesson Plan

Preparation

- Print out a vocabulary board for each student to use throughout unit
 - Laminate or place in page protector
- Book
 - Print out, laminate, and bind
 - OR your students can listen to the movie version
- Vocabulary cards
 - Print out a set of cards onto cardstock and laminate
 - Make one set for each student and also one for the teacher to use in I Spy games

Preassessment (do day 1 before starting lesson)

- Choose the form of the assessment that best fits the learning level of your students
- Give the assessment to assess what your students may already know
- I cannot emphasize enough how important this step is. If you want to see growth, this preassessment is so important!!

Teaching Tips

1. *Color Coding:* this is a really easy way to add more structure to a matching activity. Outline or color in an empty box or sorting label. Outline or color in the corresponding task.
 - a. For <http://diffe>
 - b. I also <http://3-w>
2. *Make your yesterday.*
 - a. I oft that
 - b. My mor wor

Quick Look

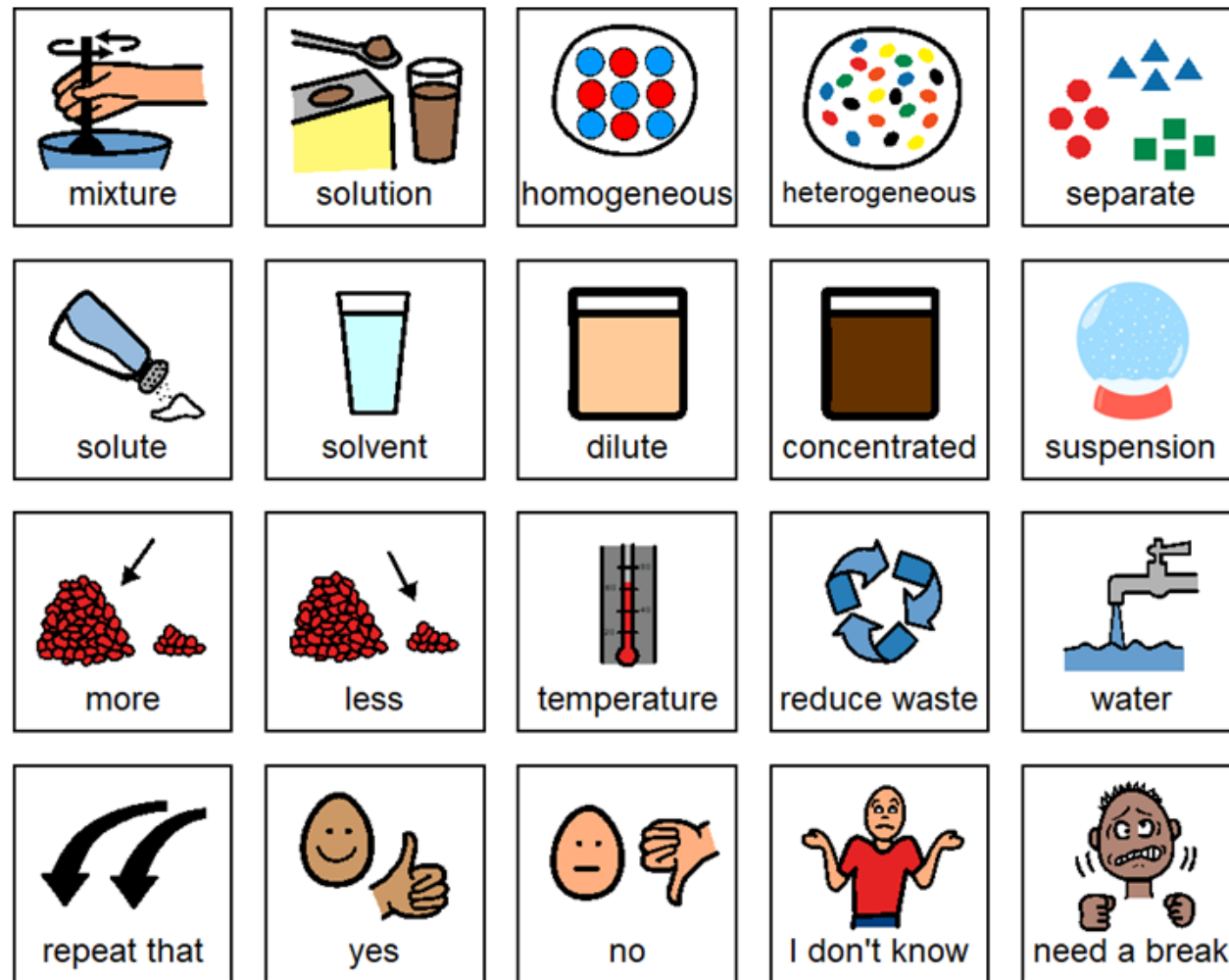
Day	Activity	Day	Activity
1	• PowerPoint • Vocab cards activity • Circle map	9	• PowerPoint • Task card group activity • Mixture, solution, suspension chart
2	• PowerPoint • Vocab cards activity • Circle map	10	• PowerPoint • Task card activity • Experiment 2
3	• PowerPoint • Vocab cards activity • Solute or Solvent	11	• PowerPoint • Vocab cut and paste • Types of solutions
4	• PowerPoint • Vocab cards activity • Solute or Solvent	12	• PowerPoint • Vocab cut and paste • Cloze worksheet
5	• PowerPoint • Vocab cards activity • Experiment 1	13	• PowerPoint • Bingo • Close worksheet
		14	• PowerPoint • Bingo • Experiment
		15	• Assessment • Bingo

Day 7

Activity	Notes	Materials
Read or listen to a recording of the PowerPoint (10 minutes)	• Read through the story, asking lots of questions • Continue to make connections between the PowerPoint and the vocabulary board	• PowerPoint • Vocabulary board
Vocabulary cards speed game (15 minutes)	• Place the finished vocabulary cards in the middle of the table • Either hold up or describe a card, and the student who can find it first wins and keeps the card • The student with the most cards at the end is the winner	• Vocabulary cards • Vocabulary board
Dilute or concentrated review (5 min)	• Review the activity completed yesterday	• Completed activity from yesterday
Does it dissolve activity (10 minutes)	• Complete the sorting activity looking at substances and decide if they would or would not dissolve. • Add color-coding if needed for more support • Make connections to PowerPoint and real-life examples	• Worksheet • Scissors • Glue
Sharing (10 minutes)	• Each student shares their finished activity with the group using the communication method of their choice	• Completed activity • Communication devices

The lesson plans contain:

- Overall tips for teaching students with significant needs
- A quick look at what you will do each day
- Detailed instructions on how that day's lesson should run



Christa Joy, SNSK
The Picture Communication Symbols ©1981–2019 by Tobii Dynavox. All Rights Reserved
Worldwide. Used with permission. Boardmaker® is a trademark of Tobii Dynavox

This unit comes with a vocabulary board.

Vocabulary boards are great for ALL students, helping with participation and engagement in group discussions.

Tips on how to use in the unit!!

There is one more type of mixture, a **suspension**. A suspension looks mixed at first, but the particles are too large to dissolve or stay mixed. They settle to the bottom if left alone.



There is a 50-page PowerPoint for this unit using simple text and photos.

A solution is more than just stirring some different things together. A **solution** is a homogenous mixture where one substance **dissolves** another substance.



It is also available as Google Slides and a pre-recorded MP4 file.

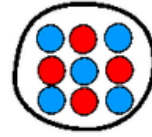
mixture

When 2 things are mixed together but do not create a brand new substance.



homogeneous

Things mixed together are **evenly** distributed through the entire mixture.



heterogeneous

Things mixed together are **unevenly** distributed through the entire mixture.



solution

A homogeneous mixture where one substance dissolves in another.



dilute

A solution with only a small amount of solute.



concentrated

A solution with a large amount of solute.



suspension

A mixture where large particles are too big to dissolve and settle to the bottom over time.



precipitate

A solid that forms in a liquid and settles to the bottom.



There are 15 vocabulary cards that come in color and black and white.

- Included are suggestions for group activities to do with these each day.
- There is also a cut-and-paste activity.



trail mix



salad



pizza



cereal



salt water



mouthwash



Kool-Aid



lemonade

Christa Joy, SNSK

Mixtures and Solutions

 supersaturated	 homogeneous	 water	 melting point
 suspension	 mixture	 boiling point	 solubility
 precipitate	 dilute	 solvent	 saturated
 solute	 solution	 heterogeneous	 concentration

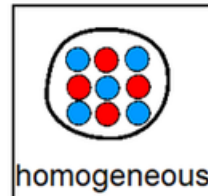
Christa Joy, SNSK
The Picture Communication Symbols ©1981-2021 by Tobii Dynavox. All Rights Reserved
Worldwide. Used with permission. Boardmaker® is a trademark of Tobii Dynavox

There are 2 group activities to review vocabulary.

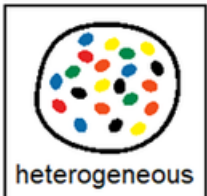
- 20 Mixture, solution, and suspension cards
- Bingo cards

**ALSO IN
BLACK & WHITE**

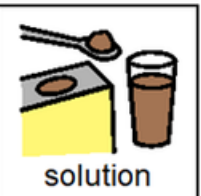
ERRORLESS



homogeneous



heterogeneous



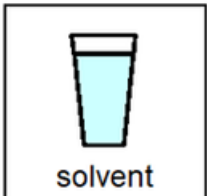
solution



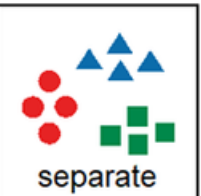
suspension



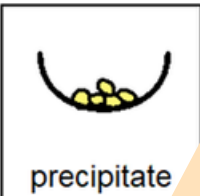
solute



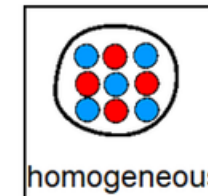
solvent



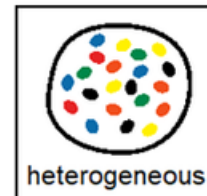
separate



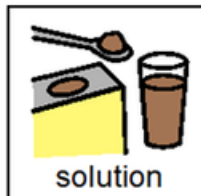
precipitate



homogeneous



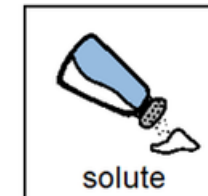
heterogeneous



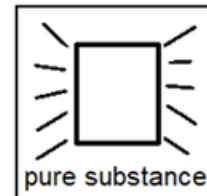
solution



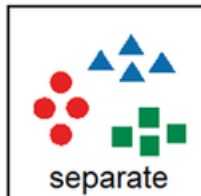
suspension



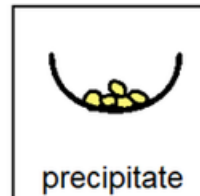
solute



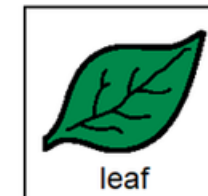
pure substance



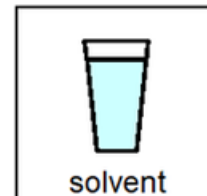
separate



precipitate



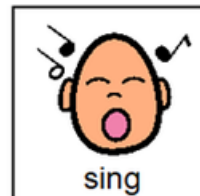
leaf



solvent



bumble bee



sing

There are 2 circle maps.

- Mixtures
- Solutions

Circle maps are a great way for students to see the concept at a glance. There are 2 versions:

- Errorless
- Wrong answers mixed in

**WRONG ANSWERS
MIXED IN**

Fill out the table below

Table 1

 Solution	 Solute	 Solvent
 saltwater		
 Kool-Aid		
 lemonade		
 chocolate milk		

The Picture Commu
Worldwide. Use

Fill out the table below

Table 2

 Solution	 Solute	 Solvent
 iced tea		
 bubbles		
 punch		
 tea		

Christa Joy, Special Needs for Special Kids
The Picture Communication Symbols ©1981–2018 by Tobii Dynavox. All Rights Reserved
Worldwide. Used with permission. Boardmaker® is a trademark of Tobii Dynavox

Students will practice identifying the solute and solvent in common solutions.

Suggestions for differentiation and an answer key are included.

Table 1

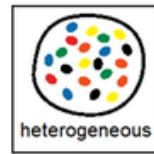
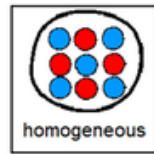
 water	 salt	 chocolate powder	 sugar	 water
 milk	 cherry powder	 water	 lemon juice	

Table 2

 water	 fruit juice concentrate	 water	 water	 honey
 instant tea	 soap	 water	 tea bag	



Christa Joy, SNSK
The Picture Communication Symbols ©1981-2018 by Tobii Dynavox. All Rights Reserved
Worldwide. Used with permission. Boardmaker® is a trademark of Tobii Dynavox



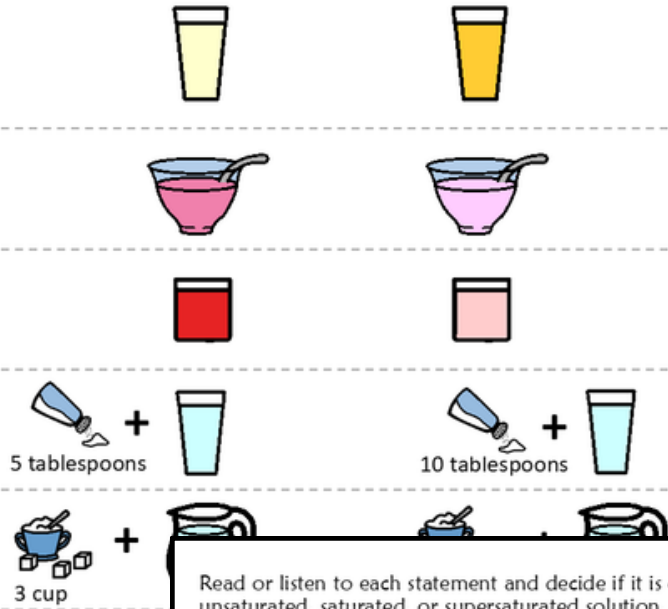
Christa Joy, Special Needs for Special Kids
The Picture Communication Symbols ©1981-2018 by Tobii Dynavox. All Rights Reserved
Worldwide. Used with permission. Boardmaker® is a trademark of Tobii Dynavox

There are 2 sorting activities

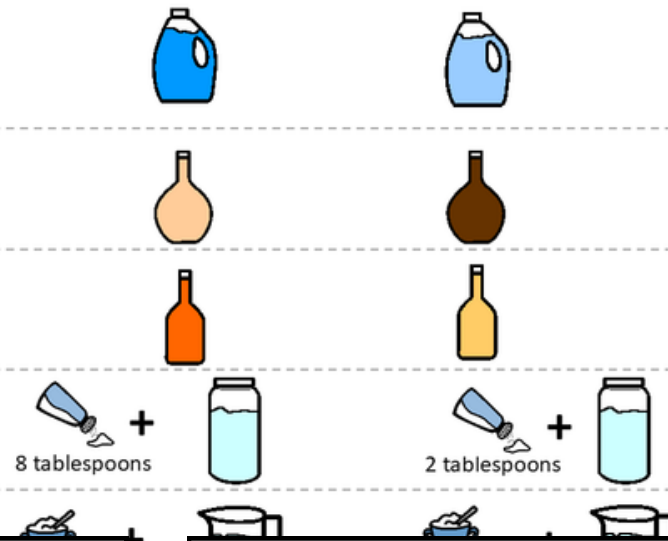
- Homogeneous mixtures vs heterogeneous mixtures
- Will it dissolve?

Suggestions for differentiation and an answer key are included.

Look at each set of solutions below. Circle the one that appears to be more **dilute**.



Look at each set of solutions below. Circle the one that appears to be more **concentrated**.



Read or listen to each statement and decide if it is describing an unsaturated, saturated, or supersaturated solution. Circle the correct answer.

1. More solute can still dissolve in the solution.



2. No more solute can still dissolve in the solution.



3. There is more dissolved solute than the liquid normally can hold.



4. If I add another spoonful, it will dissolve.



Read or listen to each statement and decide if it is describing an unsaturated, saturated, or supersaturated solution. Circle the correct answer.

5. If I add another spoonful, it will not dissolve.



6. Crystals begin to form because too much solute is dissolved.



7. The solution has not reached its limit yet.



8. The solution has reached its limit yet.



There are activities where students decide:

- dilute or concentrated
- unsaturated, saturated, or supersaturated

Suggestions for differentiation and an answer key are included.

Place a check mark under each column depending whether or not that feature is found in it. You can glue one in or draw it.

Feature	Mixture 	Solution 	Suspension 
Two or more substances			
Looks the same throughout			
Can see different parts			
Solute dissolves			
Particles settle			
Needs to be shaken or stirred frequently			
Can be filtered			

There is a chart to help students visualize the characteristics of mixtures, solutions, and suspensions.

Note: teacher should explain what will happen in the experiment so students can formulate a hypothesis.

Testing Solubilities
Experiment #2

My hypothesis

I think the order of solubility will be:

least

most



Testing Solubilities
Experiment #2



Stop when it no longer dissolves.

Sugar	Observation (circle answer)
1 spoon	All dissolve? ☒ ☐
2 spoons	All dissolve? ☒ ☐
3 spoons	All dissolve? ☒ ☐
4 spoons	All dissolve? ☒ ☐
5 spoons	All dissolve? ☒ ☐
6 spoons	All dissolve? ☒ ☐
7 spoons	All dissolve? ☒ ☐
8 spoons	All dissolve? ☒ ☐
9 spoons	All dissolve? ☒ ☐
10 spoons	All dissolve? ☒ ☐

There are 3 experiments included in this unit. It guides students through the process of creating and testing a hypothesis.

1. Will it dissolve?
2. Testing solubilities
3. Effect of temperature

Use pictures from last page to glue in chart.

Testing Solubilities
Experiment #2

Summary Observations

	Total # spoons added
Sugar	
Baking Soda	
Salt	

Least spoons

Most spoons

Solubility →

Testing Solubilities
Experiment #2

What I knew

When a solution is saturated, the

will sit at the bottom.

The more soluble a substance is, the

spoonfuls you will have to add.

What I learned

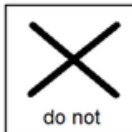
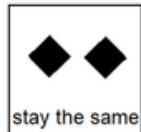
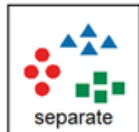
was the most soluble.

was the least soluble.



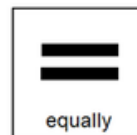
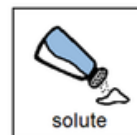
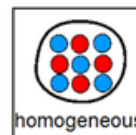
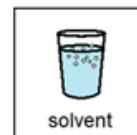
Mixtures

1. Mixtures create a new substance.
2. A homogeneous mixture has substances distributed.
3. A heterogeneous mixture has substances distributed.
4. You can components in a mixture.
5. The components in the mixture and do not change.



Solutions

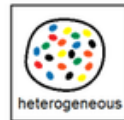
1. A solution is a mixture.
2. In a solution, components are distributed.
3. You make a solution by one component in another.
4. The is the component that dissolves.
5. The is the component that does not dissolve.



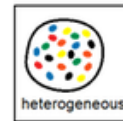
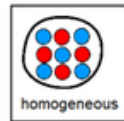
Close worksheets are a great informal assessment. This unit has 5 questions on mixtures and 10 on solutions.

Answer key included.

1. What type of mixture has components that are evenly distributed?



2. A solution is what type of mixture?



3. In a mixture of saltwater, what is the solute?



4. In a mixture of chocolate milk, what is the solvent?

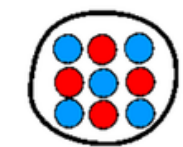


5. What is an example of a suspension?

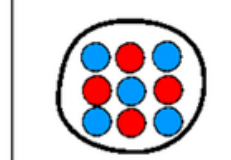


Print onto cardstock or mount on index cards. Cut pictures apart and show student answer choices for each question.

Q 1



Q 2



FINALLY the assessment!!

There are 3 versions.

- 10 questions with 3 picture choices for each question
- cut out the answer choices and glue them on index cards
- traditional multiple choice

Answer key included.

Feature	Mixture 	Solution 	Suspension 
Two or more substances			
Looks the same throughout			
Can see different parts			
Solute dissolves			
Particles settle			
Needs to be shaken or stirred frequently			

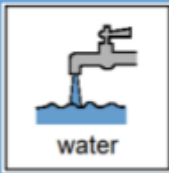
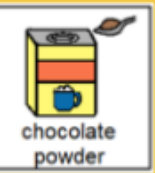
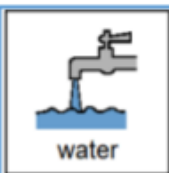
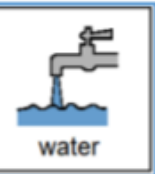
Place a check mark in the columns if they are true.



Can be

		
Solution	Solute	Solvent
 saltwater		
 Kool-Aid		
 lemonade		
 chocolate milk		

Place the pictures in the correct column.

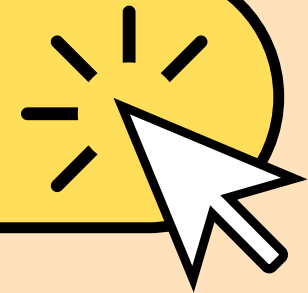
 water	 salt	 chocolate powder
 water	 sugar	 milk
 lemon juice	 cherry powder	 water

The digital activities have students click and drag their answers.

Includes a differentiated set of slides.

**SAVE MONEY AND GET THIS AS PART OF
THE CHEMISTRY CURRICULUM.**

CLICK HERE



Christa Joy, M.Ed., DVM