WHAT IS A LIQUID SOLUTION?

2c

liquid solution: a liquid mixture where the parts dissolve and spread out evenly

solute: the part of a liquid solution that dissolves

solvent: the liquid in a liquid solution

soluble: able to dissolve

AIM 2 | What is a liquid solution?

You can be a magician! Just add sugar to water and stir. Abracadabra! The sugar disappears!

But is it really gone? No. The sugar and water just *mix* together. They mix *completely*. The sugar just *seems* to disappear.

Sugar and water together form a *mixture*. There are several kinds of mixtures. Sugar and water form a special *kind* of mixture. They form a *liquid solution*.

A liquid solution has two parts: a *solute* [SOLL yoot] and a *solvent* [SOLL vent]. The *solvent* is always a liquid. The solute is what "disappears" in the solvent. The solute may be a solid, a gas, or another liquid.

A liquid solution is formed when the solute *dissolves*. The solute spreads out evenly throughout the solvent. The substance that dissolves is said to be *soluble* [SOLL yuh bul].

In the example of sugar and water, the water is the solvent. Water *dissolves* sugar. The sugar is the solute. Sugar is *soluble* in water.

There are many kinds of solvents. There are many kinds of solutes. There are many kinds of liquid solutions.

Remember, a mixture is a liquid solution *only* if the solute dissolves and spreads out evenly.

LIQUID SOLUTIONS AND THE STATES OF MATTER

All the examples in Figures A, B, and C *are liquid solutions.*

Remember, there are three states of matter—*solid, liquid,* and *gas.*

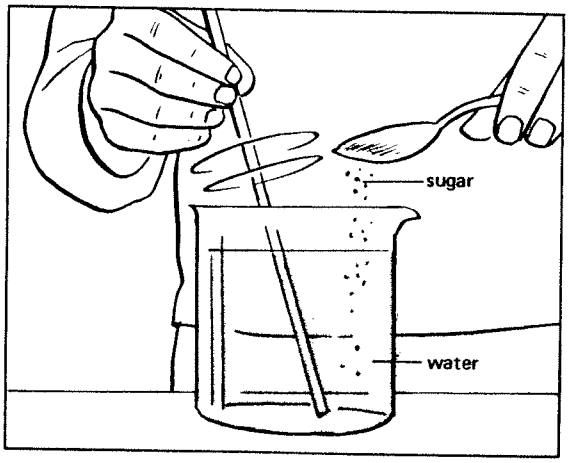

Figure A

1. **a)** Name the states of matter in this liquid solution (Figure A).

   _____ and _____

   b) The solute is the

   _____.
   solid, liquid

   c) The solvent is the

   _____.
   solid, liquid

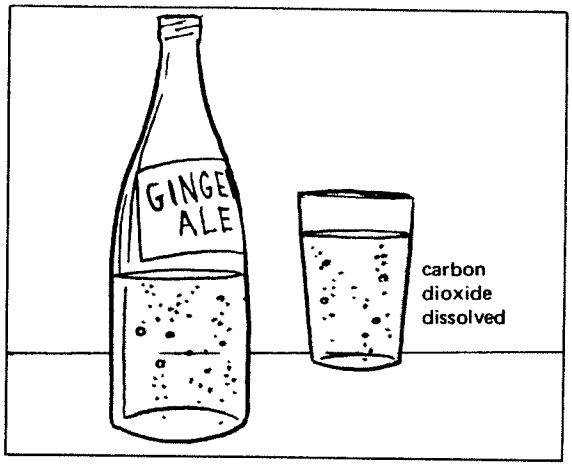

Figure B

2. **a)** Name the states of matter of this liquid solution (Figure B).

   _____ and _____

   b) The solute is the

   _____.
   gas, liquid

   c) The solvent is the

   _____.
   gas, liquid

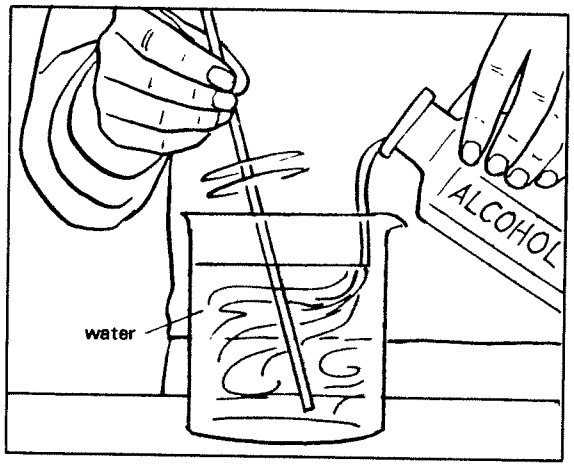

Figure C

3. Name the states of matter of this liquid solution (Figure C).

   _____ and _____

NOTE: In solutions where *all* the parts are liquid, we usually do *not* name the solute and solvent.

FILL IN THE BLANKS

Write the correct term in each blank to answer the question or complete the sentence.

1. Which state of matter is part of *all* these solutions? _____

2. A liquid solution has at least one _____.
   solid, liquid, gas

3. The solute in a liquid solution _____.
   must be a gas, must be a solid, can be any state of matter

4. In solutions of liquids and solids or of liquids and gases, the solvent is always the _____.
   solid, liquid, gas

5. In solutions of *all* liquids, we usually _____ name the solute and solvent.
   do, do not

WHICH ARE LIQUID SOLUTIONS?

Ten mixtures you know are listed below. Some are liquid solutions. Some are not. Think about each mixture.

Fill in the boxes.

Mixture	Do the substances dissolve? (Write YES or NO.)	If the substances dissolved, name the solute (or solutes).	name the solvent.
1. sugar water			
2. muddy water			
3. salty water			
4. pebbles in water			
5. instant coffee drink			
6. orange juice			
7. oil and water			
8. instant tea drink			
9. ocean water			
10. vegetable soup			

COMPLETING SENTENCES

Complete the sentences with the choices below. One of these may be used twice.

mixture	liquid solution	sugar water
two	liquid	solvent
solid	gas	solute
soluble	water	

1. Different things close together make up a _____.
2. A _____ is a special kind of mixture.
3. An example of a liquid solution is _____.
4. A liquid solution has _____ main parts.
5. One part of a liquid solution is always a _____.
6. The liquid part of a liquid solution is called the _____.
7. The other part of a liquid solution can be a _____, or a _____, or a _____.
8. The part of a liquid solution that mixes into the solvent is called the _____.
9. A solute that dissolves in a solvent is said to be _____.
10. Sugar is soluble in _____.

MATCHING

Match the two lists. Write the correct letter on the line next to each number.

1. _____ mixture
2. _____ solute
3. _____ solvent
4. _____ liquid solution
5. _____ soluble

a) means "able to dissolve"
b) liquid part of a liquid solution
c) different things close together
d) a special kind of mixture
e) part of a solution that *is* dissolved

REACHING OUT

Be a detective! How can you tell if a mixture is a liquid solution? We will learn more in following Aims. Meanwhile, let's see if you can figure out the clues.

Figure D

- This is a mixture of muddy water.
- Muddy water *is not* a liquid solution.

Figure E

- This is a mixture of sugar and water.
- Sugar and water *is* a liquid solution.

Answer YES or NO to these questions.

	Muddy Water	Sugar and Water
1. Are the parts evenly mixed?		
2. Can you see the separate parts?		
3. Do particles fall to the bottom?		
4. Can you see clearly through this mixture?		

How can you tell if a mixture is a liquid solution?

In your own words, list the clues.

_____

_____

_____

_____