

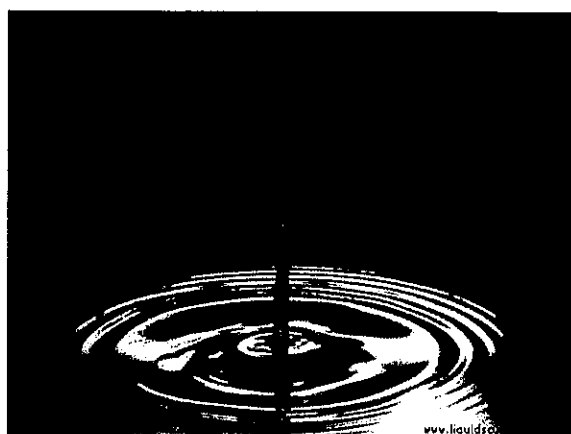


### I. What is a Solution?

- A \_\_\_\_\_ is a type of homogeneous mixture formed when one substance \_\_\_\_\_ in another.
- It is evenly mixed and does not settle out.
- \_\_\_\_\_
- Solutions can be mixtures of solids, liquids, or gases!

### II. What Makes Up a Solution?

- A solute is the substance that is being \_\_\_\_\_.
  - It is usually in the SMALLER amount
  - It is what YOU put in
- A solvent is the substance that \_\_\_\_\_.
  - It is usually in the LARGER amount
- The Universal Solvent is \_\_\_\_\_



### Examples

Solute + Solvent = Solution

Solute + Solvent = Solution

### Solute + Solvent = Solution

Concentration = Solute/Solvent

### III. Concentration

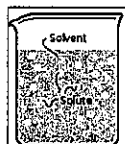
- a. \_\_\_\_\_ refers to how many solute molecules are present in a solvent.
- b. It is how much "stuff" (solute) is in a place.
- c. We use descriptive words to identify concentrations of solutions:

i. Dilute

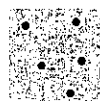
(A little amount of solute)

ii. \_\_\_\_\_

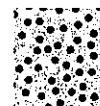
(A lot of solute)



**Diluted** ←————→ **Concentrated**  
(unsaturated) (saturated)



Key:  
● Solute particles



### IV. Dilute Solution

- a. Dilute Solution: solution containing a \_\_\_\_\_ amount of \_\_\_\_\_ compared with the amount of solvent present

i. Ex: Putting a drop of chocolate syrup in your tall glass of milk.

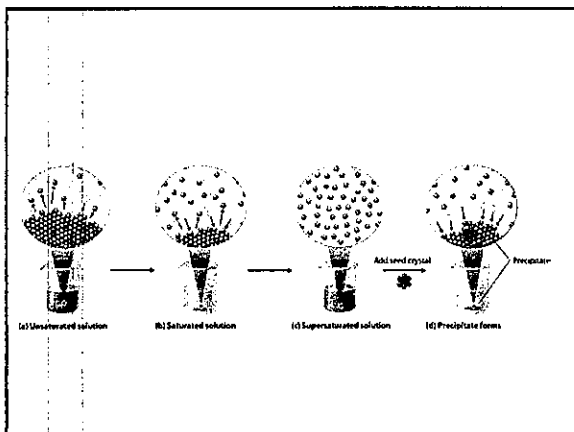
(When mom makes chocolate milk)



### V. Concentrated Solution

- a. Concentrated Solution: solution containing a \_\_\_\_\_ amount of \_\_\_\_\_ compared with the amount of solvent present

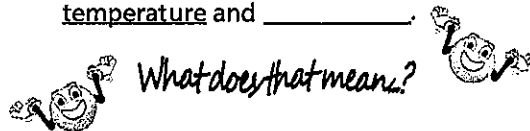
i. Ex: When YOU make Chocolate milk!



### VI. What is Solubility?



- a. \_\_\_\_\_ is the ability of one substance to dissolve in another at a given temperature and \_\_\_\_\_.



- b. Solubility is how much "stuff" (solute) something hold at a specific temperature.

### VII. How Can We Increase Solubility?

a. Increase the \_\_\_\_\_

i. The hotter the temperature, the faster the molecules move so there is more space for more solute.



b. Increase the \_\_\_\_\_

i. Solvent can hold more small pieces than large pieces.

ii. Ex: crush sugar cubes



smaller surface area  
(harder to spread out)

Larger surface area  
(easier to spread out)

c. Increase the \_\_\_\_\_ of \_\_\_\_\_

i. The more solvent there is, the more solute it can hold.

ii. Ex: Adding more water. A pitcher of water (solvent) can hold more iced tea powder (solute) than a cup of water



### VIII. Ways to Change the Dissolving Rate

a. \_\_\_\_\_ -how quickly or slowly the solute dissolves.

b. Increase dissolving rate = it dissolves faster

c. Decrease dissolving rate = it dissolves slower

d. Ways to Increase the Dissolving Rate:

1. Change surface area (amount of space a material takes up)

i. increase surface area = \_\_\_\_\_dissolving rate

ii. Decrease surface area= \_\_\_\_\_dissolving rate,



2. Stirring

i. Increase stirring= \_\_\_\_\_

ii. Decrease stirring = \_\_\_\_\_

3. \_\_\_\_\_: Changes not only the amount of the solute that can dissolve but changes how quickly it will dissolve!

i. Increase temp=increase dissolving rate

ii. Decrease temp=decrease dissolving rate

d. \_\_\_\_\_: Which is why a soda bottle emits gas when you open it – you decrease the pressure so it can't hold as much

• (Increase pressure=dissolves faster)

### IX. Remember....

- \_\_\_\_\_ will affect how much solute is dissolved in a solvent; how much it CAN hold.
- These terms are DESCRIPTIVE, and are used to \_\_\_\_\_ the amount of the solute compared to the solvent!

### XIII. Remember Kinetic Energy?

- As we \_\_\_\_\_ the temperature of something, its molecules move \_\_\_\_\_, which will give more places for a substance to "hide" in a solution.
- So the warmer the temperature, the more solute a solvent can hold!
- Hot stuff can hold more than cold; think of hot tea vs. iced tea!

