

Name: \_\_\_\_\_

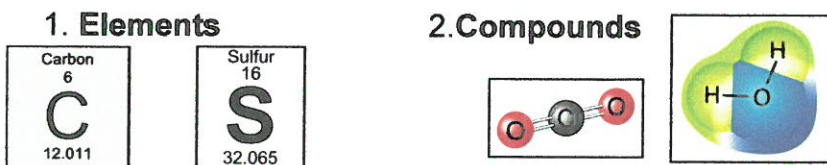
**Unit 4 Vocabulary**  
**Elements, Compounds, Mixtures, and Solutions**

1. **Element**: A substance that cannot be broken down into a simpler substance.
2. **Pure Substance**: A substance in which there is only one type of particle.
3. **Compound**: A substance made up of 2 or more elements that are chemically combined.
4. **Mixture**: A substance made up of 2 or more substances physically combined and can be separated into individual parts.
5. **Solution**: A type of mixture where the particles are evenly mixed with the particles of another substance.
6. **Solute**: The part of the solution that gets dissolved into the solvent.  
**Ex**: Salt gets dissolved in water. Salt is the solute.
7. **Solvent**: The part of the solution that does the dissolving.  
**Ex**: Water dissolves salt. Water is the solvent.
8. **Concentration**: A strong solution where there is more solute than solvent.  
**Ex**: Strong Iced Tea.
9. **Dilute**: A weak solution where there is more solvent than solute.  
**Ex**: Weak Iced Tea.
10. **Unsaturated**: A solution containing less solute than it can hold.  
**Ex**: weak iced tea.
11. **Saturated**: A solution containing all of the solute it can hold.  
**Ex**: A sponge just before it leaks.
12. **Supersaturated**: A solution containing more solute than it can normally hold.  
**Ex**: When the sugar settles to the bottom of iced tea.
13. **Solubility**: The ability of one substance to dissolve in another.
14. **Heterogeneous Mixture**: A mixture that is mixed unevenly and you can see the individual parts. **Ex**: Salad.
15. **Homogeneous Mixture**: a mixture that is mixed evenly and you cannot see the individual parts. **Ex**: Salt water.

# Unit 4-1 Elements, Compounds and Mixtures Notes

## 1. What are Pure Substances?

- \_\_\_\_\_ are substances in which there is only one type of particle.
- These particles are called \_\_\_\_\_.
- The only two things that are pure substances are:



## 2. What are Elements?

- An \_\_\_\_\_ is a pure substance that cannot be separated or broken down into simpler substances by physical or chemical means.
- What are examples of elements?
  - Anything that is on the \_\_\_\_\_

- Examples: Gold (Au), Silicon (Si), Neon (Ne), Silver (Ag), sulfur (S)

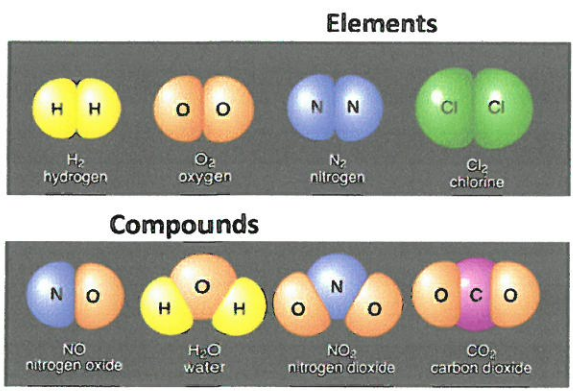
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## 3. Identifying Elements

- Elements are categorized by unique properties on the Periodic Table.
- They are arranged in order by their number of \_\_\_\_\_.
- (More on this later!)
- Each element has unique properties like *melting point*, *boiling point*, and *whether it is metal, nonmetal or metalloid*.

## 4. What are Compounds?

- A \_\_\_\_\_ is a pure substance composed of *two or more elements* chemically combined.
- This means they were formed by a chemical reaction.



## 5. Forming a Compound

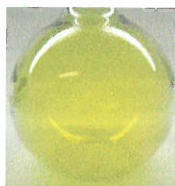
- \_\_\_\_\_ by combining *two* or more *elements*.
- Elements are “stuck together” by chemical bonds
  - New properties (things) are formed; the elements lose their original properties.
  - You end up with *one new thing!*

**ELEMENTS MAKE COMPOUNDS!!**

### Example: Formation of NaCl (Table Salt)



+



**Sodium** is a soft, silvery white metal that reacts violently with water.

**Chlorine** is a poisonous, greenish-yellow gas.

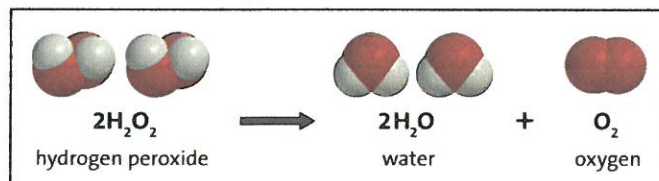
**Sodium Chloride**, or table salt, is a white solid. It dissolves easily in water and is safe to eat.

**\*\*Compounds have properties that differ from those of the elements that form it!\*\***

## 6. How are Compounds Separated?

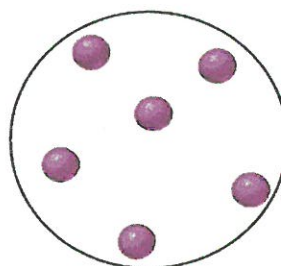
- Compounds are broken apart by \_\_\_\_\_
  - You separate them by forcing another chemical reaction to happen
  - **CHEMICAL CHANGE!!!!**
  - Add heat, electricity, another compound or element as a chemical reaction
- Remember compounds are specific recipes!

### Breaking Chemical Bonds

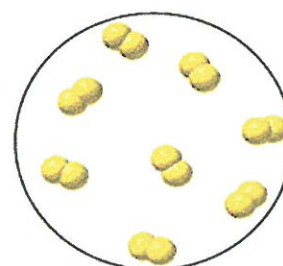


## 7. What is a Mixture?

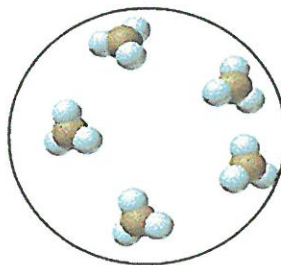
- A \_\_\_\_\_ is when 2 or more substances are combined but *do not* chemically react.
- THE SUBSTANCES KEEP THEIR OWN PROPERTIES!!
- We say that we **MIX** to form them.



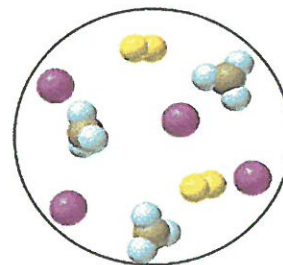
A Atoms of an element



B Molecules of an element



C Molecules of a compound



D Mixture of two elements and a compound

### Examples of Mixtures

- Iced tea powder and water
- Granite
- Milk
- Oil and vinegar



## 8. Three Properties of a Mixture

- It is **NOT** a chemical change
- It *can be separated* by physical means
- Ratio of each substance does **NOT** matter

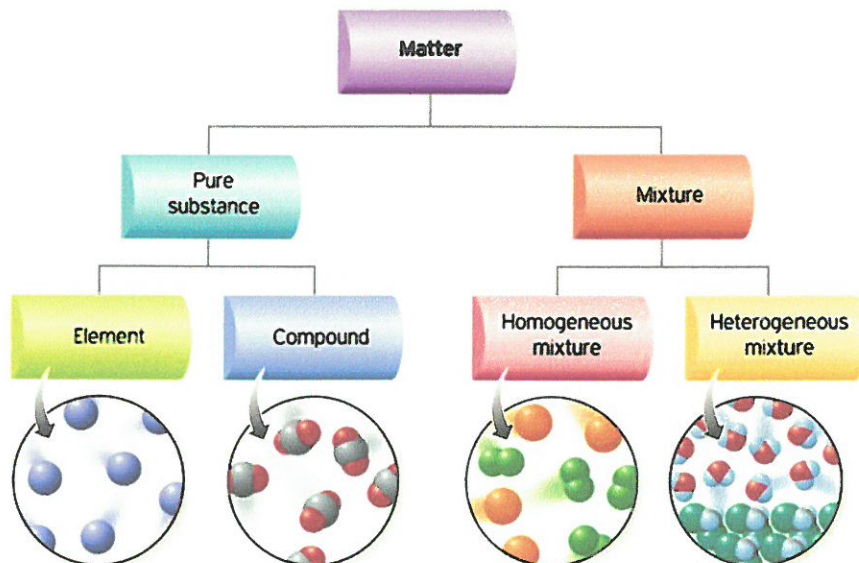
## 9. How to Separate a Mixture

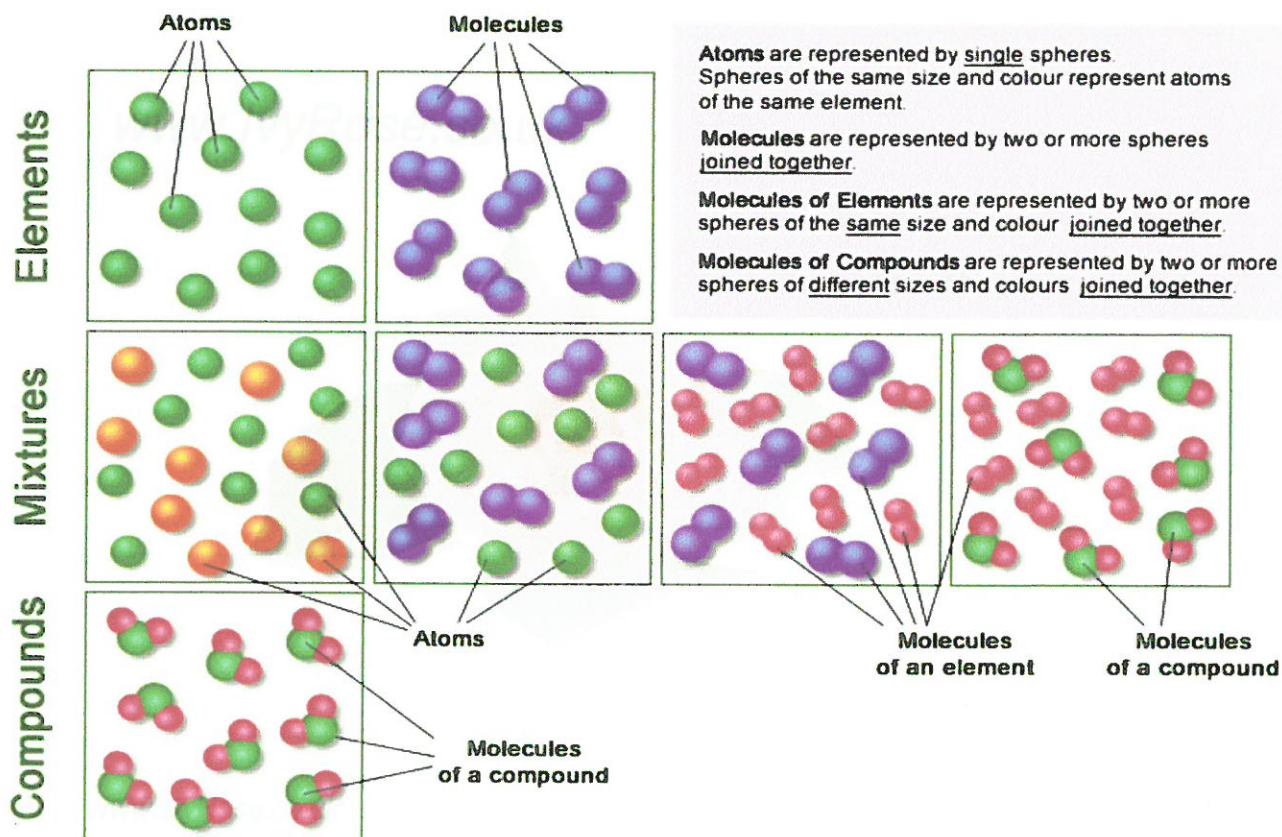
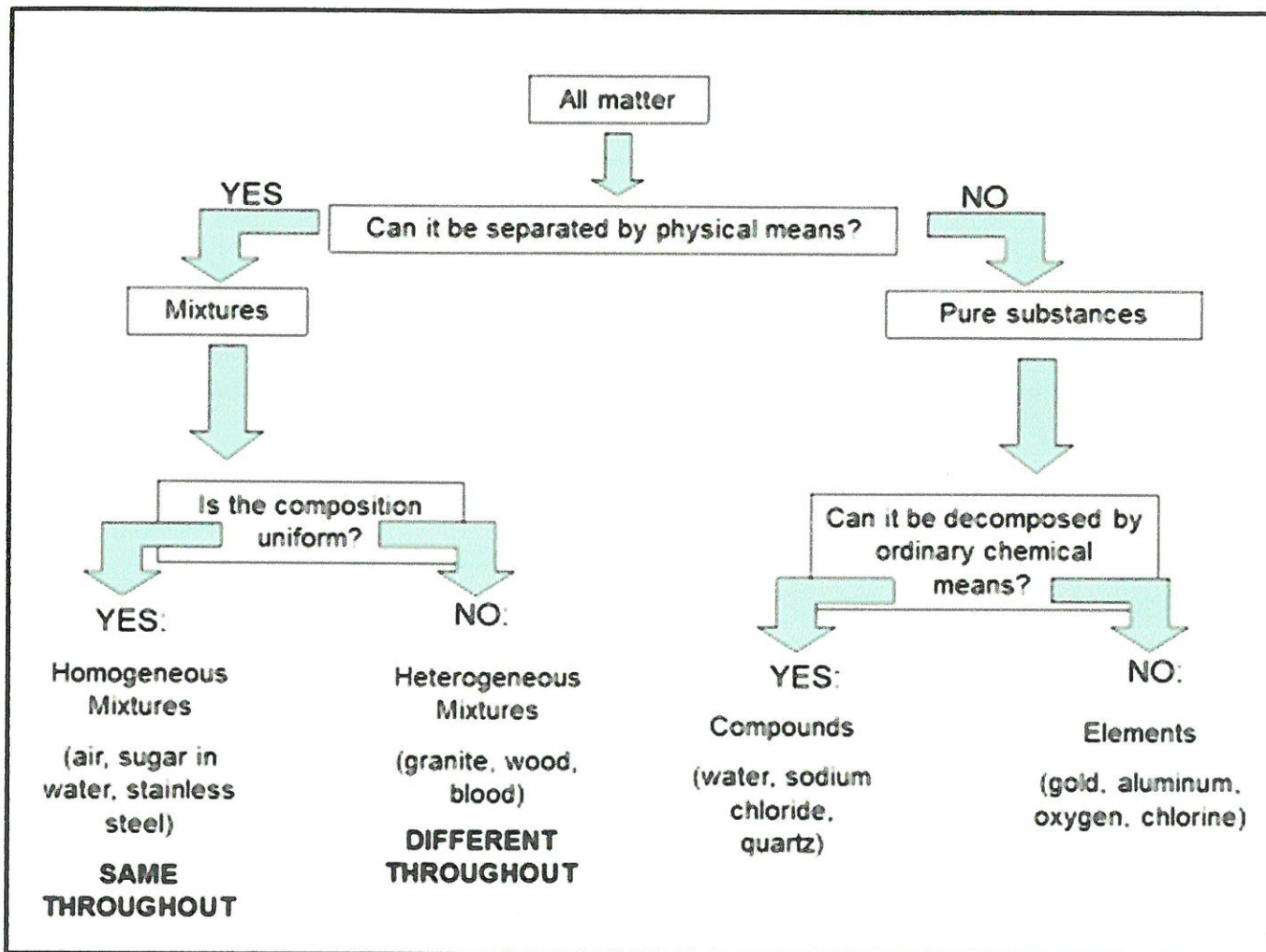
- Pick apart or straining
- Evaporation
- Filter
- Centrifuge
- Distillation (boiling the solvent to separate it from the solute)
- Magnetism (like iron)

Separating a mixture is a **PHYSICAL CHANGE** because there are no chemical reactions or changes - parts keep their properties!!

## 10. Types of Mixtures

<b>Homogeneous</b> (Homo = same)	<b>Heterogeneous</b> (Hetero = different)
↓	↓
The mixture appears to be _____	The mixture appears to be _____
throughout	throughout
<b>Examples:</b>	<b>Examples:</b>
<ol style="list-style-type: none"><li>Milk</li><li>Stainless steel</li><li>Oil</li><li>Brass (Cu + Zn)</li></ol>	<ol style="list-style-type: none"><li>Oil &amp; vinegar</li><li>Concrete</li><li>Soil</li><li>Pizza, Cereal</li></ol>





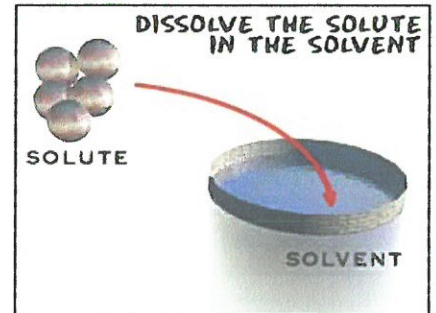
## Unit 4-2 Solutions Notes

### 1. What is a Solution?

- A \_\_\_\_\_ is a type of **homogeneous mixture** formed when one substance dissolves in another.
- It is evenly mixed and does not settle out.
- Can't see the different particles
- Solutions can be mixtures of \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_!

### 2. What makes up a Solution?

- A \_\_\_\_\_ is the substance that is *being dissolved*.
  - It is usually in the *SMALLER* amount
- A \_\_\_\_\_ is the substance that *does the dissolving*.
  - It is usually in the *LARGER* amount

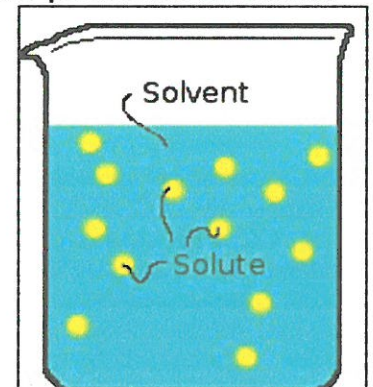


THE UNIVERSAL SOLVENT: \_\_\_\_\_.

### 3. Concentration

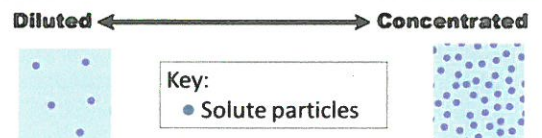
- \_\_\_\_\_ refers to how many solute molecules are present in a solvent.
- It is how much "stuff" is in a place.
- We use *descriptive words* to identify concentrations of solutions:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



### 4. Dilute Solution

- \_\_\_\_\_ : Solution containing a **small amount of solute** compared with the amount of solvent present
- Ex: When **MOM** makes chocolate milk



### 5. Concentrated Solution

- \_\_\_\_\_ : Solution containing a **large amount of solute** compared with the amount of solvent present.
- Ex. When **YOU** make chocolate milk

## Unsaturated, Saturated, and Supersaturated Solutions

### 6. Unsaturated Solution

a. \_\_\_\_\_: a solution containing *less* solute than it can hold at a given temperature.

- Weak Iced Tea
- This is a DILUTE solution!



### 7. Saturated Solution

a. \_\_\_\_\_: a solution containing all of the solute it can hold at a given temperature.

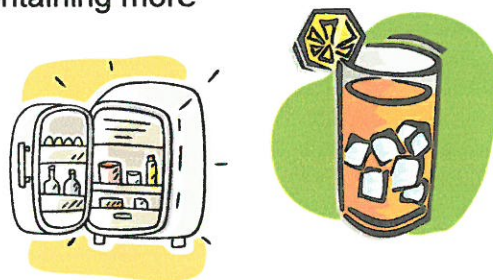
- b. Nothing has settled to the bottom
- c. *Think about a sponge just before it leaks!*



### 8. Supersaturated Solution

a. \_\_\_\_\_: a solution containing more solute than it can normally hold at a given temperature

- b. As the temperature cools, stuff will settle to the bottom; because cool stuff can hold less solute
- c. When stuff settles to the bottom



### 9. What is Solubility?

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

### 10. How can we Increase Solubility?

- a. Increase the \_\_\_\_\_
- b. Increase the \_\_\_\_\_ (smaller pieces dissolve faster than larger pieces)
- c. Increase the \_\_\_\_\_

### 11. How to Change rate of dissolving:

- a. Increase surface area
- b. \_\_\_\_\_
- c. \_\_\_\_\_: Changes not only the amount of the solute that can dissolve but changes how quickly it will dissolve!
- d. \_\_\_\_\_: Which is why a soda bottle emits gas when you open it – you decrease the pressure so it can't hold as much

# 4 Classes of Matter

## 1. MIXTURES

Homogeneous      Heterogeneous

Colloids

## 2. SOLUTIONS

*Mixtures can be separated by physical changes.*

## 3. ELEMENTS

(pure substance):

Fe, S, O, H, N

## 4. COMPOUNDS

(pure substance):

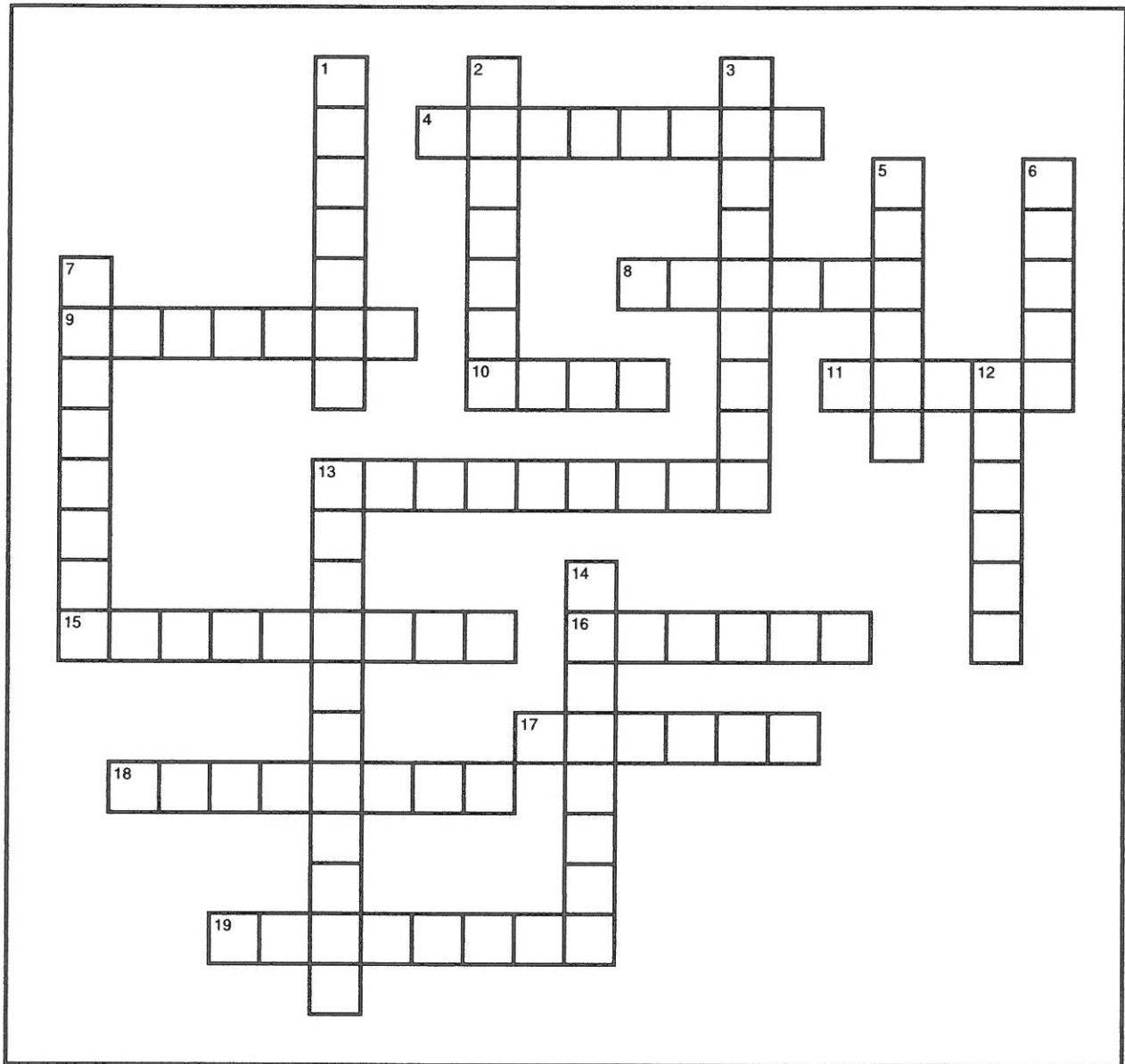
H<sub>2</sub>O, SiO<sub>2</sub>, CuSO<sub>4</sub>

*Can be decomposed by chemical changes:*





## Element Symbols and Element Names: First 20



**Across**

**Down**

- |        |        |        |       |       |        |
|--------|--------|--------|-------|-------|--------|
| 4. N   | 11. B  | 17. Na | 1. Ca | 5. C  | 12. O  |
| 8. S   | 13. K  | 18. H  | 2. Si | 6. Ar | 13. P  |
| 9. Li  | 15. Mg | 19. F  | 3. Be | 7. Al | 14. Cl |
| 10. Ne | 16. He |        |       |       |        |

### Element Names: First 20

W	L	R	C	G	S	N	C	M	I	D	C	Z	U	S	H	T	X	J	K	B
I	Z	A	C	C	H	L	O	R	I	N	E	M	W	G	D	Q	J	Y	L	P
T	L	K	V	A	O	F	F	L	V	O	G	A	V	O	S	S	H	K	G	K
X	L	H	B	S	M	I	I	S	X	R	U	A	A	L	U	M	I	N	U	M
D	C	U	V	X	Q	T	I	Y	F	K	H	J	W	I	V	P	K	G	A	X
O	B	E	J	A	H	D	G	R	H	Y	D	R	O	G	E	N	W	N	E	X
U	X	H	T	I	K	E	U	A	X	V	F	J	B	D	M	L	D	A	G	A
G	S	B	U	H	N	F	Z	M	Z	N	V	F	N	U	J	N	E	L	G	R
B	S	M	T	E	L	O	N	Z	R	J	L	N	I	Q	O	Y	A	Y	X	G
X	U	M	P	U	N	Q	Z	Q	K	U	O	S	N	C	K	R	B	K	J	O
A	O	Z	S	K	Z	Y	U	N	O	R	E	U	I	X	G	S	M	F	K	N
P	R	C	A	R	B	O	N	R	O	N	E	L	X	G	D	W	U	L	T	F
X	O	N	M	N	D	A	I	B	G	D	I	B	G	S	Z	T	I	S	B	X
B	H	T	O	Q	Z	N	P	A	J	S	W	I	Q	R	C	C	C	U	G	C
J	P	W	A	L	E	D	M	Z	G	B	X	Q	N	T	X	X	L	O	D	W
N	S	S	V	S	M	D	I	C	C	V	Q	U	D	L	Q	V	A	X	Y	G
U	O	R	O	U	S	N	S	O	R	Q	H	M	O	A	O	O	C	A	F	Y
V	H	W	I	D	E	I	F	V	K	E	L	L	T	Q	U	X	X	F	Q	G
J	P	L	O	O	I	M	U	R	R	N	E	G	O	R	T	I	N	C	P	Y
K	E	E	N	U	D	U	I	M	B	E	R	Y	L	L	I	U	M	A	N	T
H	S	I	Y	I	X	B	M	D	O	Y	X	D	B	W	D	J	D	H	S	W

Hydrogen

Helium

Lithium

Beryllium

Boron

Carbon

Nitrogen

Oxygen

Fluorine

Neon

Sodium

Magnesium

Aluminum

Silicon

Phosphorous

Sulfur

Chlorine

Argon

Potassium

Calcium



# PERIODIC TABLE OF ELEMENTS

Date: \_\_\_\_\_

Name: \_\_\_\_\_

Class: \_\_\_\_\_

**1** What characteristics are shared by all alkali metals and alkaline earth metals?

- A They conduct electricity very well
- B They are strong and shiny
- C They form alkaline solutions when mixed with water
- D They do not react with water at all

**2** Carbon has an atomic number of 6. What can you conclude about carbon from this fact?

- A It has six protons
- B It has six neutrons
- C It has six electrons
- D It has six positrons

**3** Noble gases are sometimes called "inert gases." What can you infer about the meaning of the word "inert" in chemistry?

- A It refers to substances that easily lose electrons
- B It refers to substances that do not react with other substances
- C It refers to substances that have strong electrochemical charges
- D It refers to gases

**4**  What do the orange and yellow spheres represent in this model of an atomic nucleus?

- A Gluons and leptons
- B Protons and neutrons
- C Positrons and electrons
- D Atoms and molecules

**5**  What do the elements highlighted in red have in common?

- A The same number of protons
- B The same number of electrons
- C The same number of neutrons
- D The same number of electron shells

**6** Which of the following is a true statement?

- A Periods form horizontal rows; groups form vertical columns
- B Groups form horizontal rows; periods form vertical columns
- C Categories form horizontal rows; gases form vertical columns
- D Gases form horizontal rows; categories form vertical columns

**7** What is true of all molecules?

- A They have electrochemical charges
- B They lack electrochemical charges
- C They have full outer electron shells
- D They contain at least one proton

**8** What is one key physical difference between transition metals and poor metals?

- A Atomic mass
- B Hardness
- C Reactivity
- D Charge

**9** If you wanted to find a sample of fermium, which has an atomic number of 100, where would you look?

- A Deep within the Earth
- B In the Earth's atmosphere
- C In outer space
- D In a science lab

**10** To become positively charged, an atom must:

- A Gain a proton
- B Lose a proton
- C Gain an electron
- D Lose an electron

# Compounds vs. Mixtures

**COMPOUND:** \_\_\_\_\_ that are chemically combined.

\*Can not be broken down easily.

**EX:** \_\_\_\_\_ (H<sub>2</sub>O)—Hydrogen and Oxygen)  
\_\_\_\_\_ (NaCl)—Sodium and Chlorine

\_\_\_\_\_ : 2 or more substances that are \_\_\_\_\_  
combined.

\*Easy to separate because they are physically combined.

**EX: Salt Water** — can be \_\_\_\_\_ by  
evaporation

**Salad** — can be physically separated by hand

## Two types of Mixtures:

**Homogeneous:** the substances \_\_\_\_\_ distributed evenly.

**EX: Salt Water**

---

**Heterogeneous:** the substances are \_\_\_\_\_ distributed  
evenly.

**EX: Salad**— \_\_\_\_\_ of the different  
substances

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Per: \_\_\_\_\_

Chapter 4: Elements, Compound, Mixtures

**Section: Elements**

**CLASSIFYING ELEMENTS BY THEIR PROPERTIES**

1. Which of the following is **NOT** a physical or chemical change?

- a. crushing
- b. weighing
- c. melting
- d. passing electric current

2. A pure substance that cannot be separated into simpler substances by physical or chemical means is a(n) \_\_\_\_\_.

3. A substance that contains only one type of particle is a(n) \_\_\_\_\_.

4. The amount of an element present does not affect the element's \_\_\_\_\_.

5. Why does a helium-filled balloon float up when it is released?

Look at each property listed below. If it is a characteristic property of elements, write CP on the line. If it is not a characteristic property, write N.

- \_\_\_\_\_ 6. size
- \_\_\_\_\_ 7. melting point
- \_\_\_\_\_ 8. density
- \_\_\_\_\_ 9. shape
- \_\_\_\_\_ 10. mass
- \_\_\_\_\_ 11. volume
- \_\_\_\_\_ 12. color
- \_\_\_\_\_ 13. hardness
- \_\_\_\_\_ 14. flammability
- \_\_\_\_\_ 15. weight
- \_\_\_\_\_ 16. reactivity with acid

17. What are two common properties that most ferriers share?

18. All elements can be classified as metals, metalloids, or \_\_\_\_\_.

19. An element that is shiny and that conducts heat and electric current well is a(n) \_\_\_\_\_.

20. An element that conducts heat and electric current poorly, and can be a solid, liquid, or gas is a(n) \_\_\_\_\_.

21. Elements that have properties of both metals and nonmetals are \_\_\_\_\_.

Indicate whether the description applies to a metal, a nonmetal, or a metalloid. Write the correct letter in the space provided.

- \_\_\_\_\_ 22. are malleable
- \_\_\_\_\_ 23. are dull or shiny
- \_\_\_\_\_ 24. are poor conductors
- \_\_\_\_\_ 25. tend to be brittle and unmalleable as solids
- \_\_\_\_\_ 26. are always shiny
- \_\_\_\_\_ 27. are also called semiconductors
- \_\_\_\_\_ 28. are always dull
- \_\_\_\_\_ 29. are somewhat ductile
- \_\_\_\_\_ 30. include boron, silicon, antimony
- \_\_\_\_\_ 31. include lead, tin, copper
- \_\_\_\_\_ 32. include sulfur, iodine, neon

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### Chapter 4: Compounds

1. List three examples of compounds you encounter every day.

Match the correct description with the correct term. Write the letter in the space provided.

\_\_\_\_\_ 7. a poisonous, greenish yellow gas      a. sodium chloride

\_\_\_\_\_ 8. table salt      b. chlorine

\_\_\_\_\_ 9. a soft, silvery white metal that reacts violently with water      c. sodium

### COMPOUNDS: MADE OF ELEMENTS

\_\_\_\_\_ 2. Which of the following is **NOT** true about compounds?

- a. Compounds are combinations of elements that join in specific ratios according to their masses.
- b. The mass ratio of a specific compound is always the same.
- c. Compounds are random combinations of elements.
- d. Different mass ratios mean different compounds.

3. When two or more elements are joined by chemical bonds to form a new pure substance, we call that new substance a(n) \_\_\_\_\_.

4. A compound is different from the \_\_\_\_\_ that reacted to form it.

### PROPERTIES OF COMPOUNDS

\_\_\_\_\_ 5. Which of the following statements is **true** about the properties of compounds?

- a. A property of all compounds is to react with acid.
- b. Each compound has its own physical properties.
- c. Compounds cannot be identified by their chemical properties.
- d. A compound has the same properties as the elements that form it.

6. Sodium and chlorine can be extremely dangerous in their elemental form. How is it possible that we can eat them in a compound?

Name of Compound	Chemical Formula	Elements in compound
Hydrogen Peroxide	H <sub>2</sub> O <sub>2</sub>	
Hydrochloric Acid (stomach acid)	HCl	
Acetic Acid (vinegar)	CH <sub>3</sub> COOH	
Glucose (sugar in plants)	C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>	
Table Salt	NaCl	
Nitrous oxide (laughing gas)	N <sub>2</sub> O	

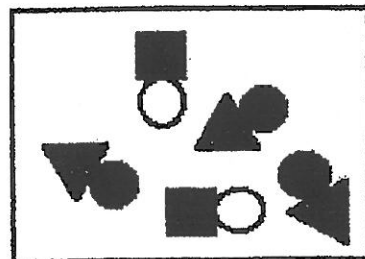
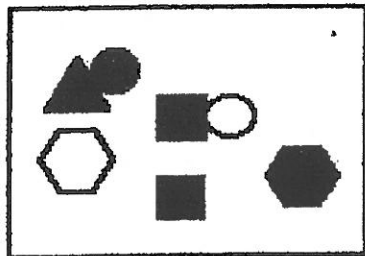
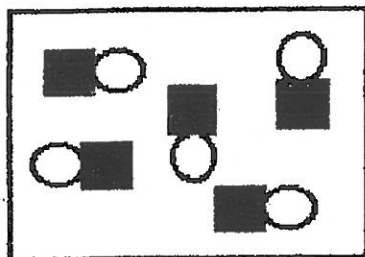
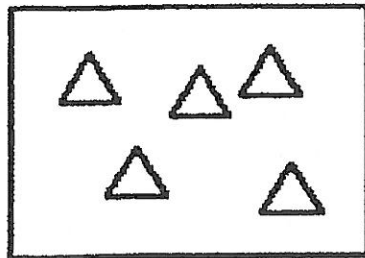
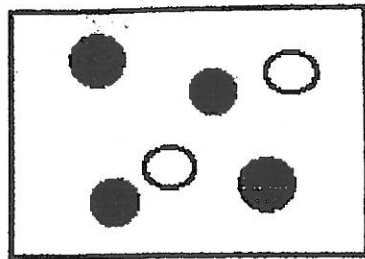
11. The only way to break down a compound is through a(n) \_\_\_\_\_ change.

12. Aluminum is produced by breaking down the compound \_\_\_\_\_.

13. Plants use the compound \_\_\_\_\_ in photosynthesis to make carbohydrates.

# Elements, compounds, mixtures

Name \_\_\_\_\_



Match the boxes at the left with the descriptions given below:

- \_\_\_ 1. element
- \_\_\_ 2. compound
- \_\_\_ 3. mixture of elements
- \_\_\_ 4. mixture of compounds
- \_\_\_ 5. mixture of compounds & elements

Which of the boxes at the left (there may be more than one correct box) contain:

- \_\_\_ 6. only atoms, no molecules
- \_\_\_ 7. only molecules, no separate atoms
- \_\_\_ 8. both atoms and molecules

Which of the boxes at the left (there may be more than one correct box) contain:

- \_\_\_ 9. heterogenous matter
- \_\_\_ 10. homogeneous matter



# COMPOUNDS AND MIXTURES

Date: \_\_\_\_\_

Name: \_\_\_\_\_

Class: \_\_\_\_\_

1 How is a compound different from a mixture?

- A Mixtures are created through physical changes; compounds are created through chemical reactions
- B Compounds are created through physical changes; mixtures are created through chemical reactions
- C Mixtures, on average, are heavier than compounds
- D Compounds, on average, are heavier than mixtures

2 What occurs during a chemical reaction?

- A Atoms of two or more elements are destroyed
- B Atoms of two or more elements oppose one another
- C Atoms of two or more elements bond together
- D Atoms of two or more elements trade protons

3 What is true of a mixture?

- A It is always thicker than the two chemicals that go into it
- B It retains the properties of the substances that make it up
- C It can never be separated into its constituent substances
- D It is produced through chemical reactions

4 Based on the information from the movie, what can you conclude about the most common chemical compound on earth?

- A It's oxygen
- B It's hydrogen gas
- C It's carbon dioxide
- D It's water

5 What is true of a compound?

- A It does not always retain the properties of the substances that make it up
- B It must have water as one of its components
- C It requires heat energy to make
- D It requires electrical energy to make

6 Which of the following two ingredients can combine to make a compound?

- A Salt and water
- B Hydrogen and oxygen
- C Eggs and butter
- D Sugar and water

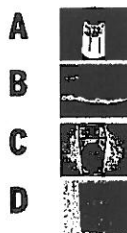
7 Which of the following is a heterogeneous mixture?



8 Which of the following is an example of a chemical element?

- A Salt
- B Water
- C Sugar
- D Sodium

9 Where can you find a common homogenous mixture?



10 The elements of a heterogeneous mixture can be distinguished visually. What does this mean?

- A That two separate elements have been mixed together
- B That the components of the mixture cannot be separated
- C That you can see the different component parts of the mixture
- D That heterogeneous mixtures combine solids and liquids



Name \_\_\_\_\_

# Solutions

**Solutions** are homogeneous mixtures of two or more substances. The **solute** is the substance that is dissolved. The **solvent** is the substance in which the solute is dissolved.

Most solutions contain more solvent than solute. The rate at which a solute dissolves in a given solvent usually can be increased by

- stirring or shaking the mixture.
- breaking or crushing the solute into smaller particles.
- heating the solution.

As a general rule, a solvent will dissolve a solute that is chemically like itself.

The **solubility** of a substance is the amount of solute that can be dissolved in a certain amount of solvent at a given temperature. If a substance is **insoluble** in a solvent, it will not dissolve in the solvent.

A solution can be described as either concentrated or dilute. A **concentrated** solution contains a large amount of solute compared to the amount of solvent. It is a strong solution. A **dilute** solution has a small amount of solute compared to the amount of solvent. It is a weak solution.

When a solution has dissolved all of the solute that it can dissolve, the solution is described as **saturated**. If more solute can be dissolved in a solution, the solution is described as **unsaturated**. When a solution has dissolved more solute at a particular temperature than it normally does, the solution is said to be **supersaturated**.

Unscramble each term below. Write its correct spelling in the first blank. Next, match each term with its definition. Write the definition's letter in the second blank.

1. NIOTLOSU \_\_\_\_\_
2. UILETD \_\_\_\_\_
3. ECNNTAECORTD \_\_\_\_\_
4. EUAUATRSRESPTD \_\_\_\_\_
5. VSOIELDS \_\_\_\_\_
6. ASURETTDNUA \_\_\_\_\_
7. NLBLOISUE \_\_\_\_\_
8. STLUOE \_\_\_\_\_
9. STNVLOE \_\_\_\_\_
10. DTUTARASE \_\_\_\_\_

- A. cannot dissolve more solute
- B. weak
- C. homogeneous mixture
- D. to go into solution
- E. substance that is dissolved
- F. substance that does the dissolving
- G. will not dissolve
- H. strong
- I. contains more solute than normal
- J. can dissolve more solute

# Characteristics of Solutions

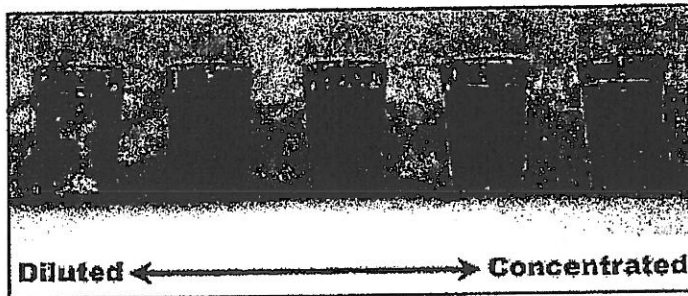
Solutions can be classified as:

- \* \_\_\_\_\_: (weak) there is \_\_\_\_\_ solute and \_\_\_\_\_ solvent.

EX: Iced tea that is not sweet or slightly sweet is considered to be dilute.

- \* \_\_\_\_\_: (strong) there is \_\_\_\_\_ solute and \_\_\_\_\_ solvent.

EX: Iced tea that is very sweet is considered to be concentrated.



# Characteristics of Solutions

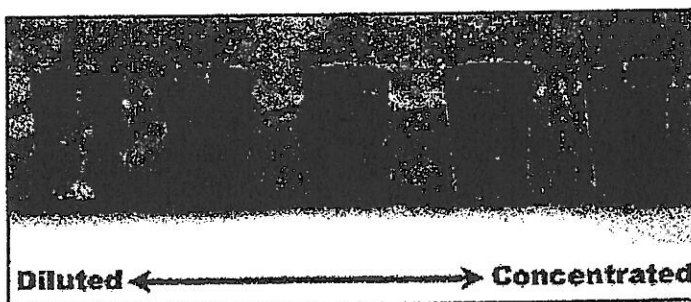
Solutions can be classified as:

- \* \_\_\_\_\_: (weak) there is \_\_\_\_\_ solute and \_\_\_\_\_ solvent.

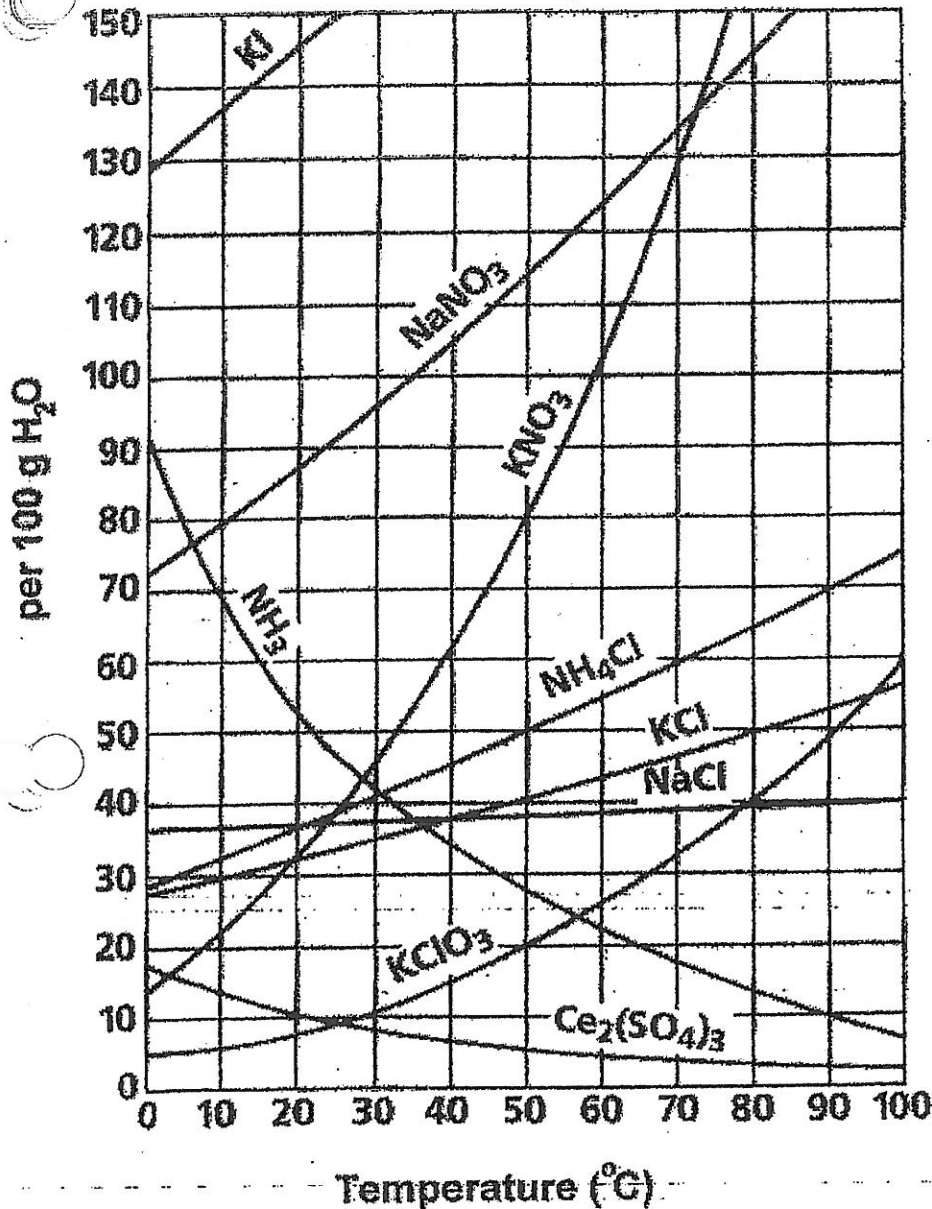
EX: Iced tea that is not sweet or slightly sweet is considered to be dilute.

- \* \_\_\_\_\_: (strong) there is \_\_\_\_\_ solute and \_\_\_\_\_ solvent.

EX: Iced tea that is very sweet is considered to be concentrated.



# Solubility Curve



Name \_\_\_\_\_  
 Date \_\_\_\_\_  
 Per. \_\_\_\_\_  
 Number \_\_\_\_\_

- How many atoms are in  $\text{KNO}_3$ ? \_\_\_\_\_
- How many elements are in  $\text{KNO}_3$ ? \_\_\_\_\_
- How much  $\text{KNO}_3$  will dissolve at  $70^\circ\text{C}$ ? \_\_\_\_\_
- How much  $\text{NaCl}$  will dissolve at  $100^\circ\text{C}$ ? \_\_\_\_\_
- How much  $\text{NH}_4\text{Cl}$  will dissolve at  $90^\circ\text{C}$ ? \_\_\_\_\_
- How much  $\text{KI}$  will dissolve at  $20^\circ\text{C}$ ? \_\_\_\_\_
- Which substance is the most soluble in water at  $10^\circ\text{C}$ ? \_\_\_\_\_
- Which substance shows the least change in solubility as the temperature changes?  
 \_\_\_\_\_
- What 2 substances show a decrease in the amount that will dissolve as the temperature increases? \_\_\_\_\_
- What happens to the solubility of most of the substances as the temperature of the water increases?

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Per: \_\_\_\_\_

**SOLUTIONS : Use notes**

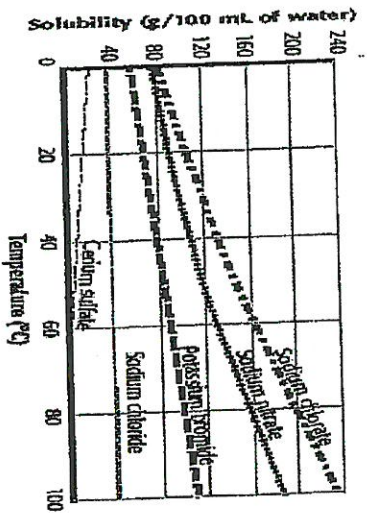
- Which of the following is **NOT** true of solutions:
  - They contain a dissolved substance called a solute.
  - They are composed of two or more evenly distributed substances.
  - They contain a substance called a solvent, in which another substance is dissolved.
  - They appear to be more than one substance.
- The process in which particles of substances separate and spread evenly through a mixture is known as \_\_\_\_\_.
- In a solution, the \_\_\_\_\_ is the substance that is dissolved, and the \_\_\_\_\_ is the substance in which it is dissolved.
- Salt is \_\_\_\_\_ in water because it dissolves in water.
- When two gases or two liquids form a solution, the substance that is present in the largest amount is the \_\_\_\_\_.
- A solid solution of metals or nonmetals dissolved in metals is a(n) \_\_\_\_\_.
- What can particles in solution **NOT** do because they are so small?

**CONCENTRATION OF SOLUTIONS**

- A measure of the amount of solute dissolved in a solvent is called \_\_\_\_\_.
- What is the difference between a dilute solution and a concentrated solution?
- The ability of a solute to dissolve in a solvent at a certain temperature and pressure is called \_\_\_\_\_.

**Chapter 4: Elements, Compounds and Mixtures**

Look at the graph for questions 11-14



- Which solid is less soluble at higher temperatures than at lower temperatures?
  - sodium chloride
  - sodium nitrate
  - potassium bromide
  - cerium sulfate
- Look at the graph. Which compound's solubility is least affected by temperature changes?
  - sodium chloride
  - sodium nitrate
  - potassium bromide
  - cerium sulfate
- Solubility of solids in liquids tends to \_\_\_\_\_ with an increase in temperature.
- Solubility of gases in liquids tends to \_\_\_\_\_ with an increase in temperature.
- What are three ways to make a sugar cube dissolve more quickly in water?

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

## Unit 4-Elements, Compounds & Mixtures Review Sheet

Directions: Use your notes and vocab cards to answer the following questions in your science notebook

Use your Unit 4 Elements, Compounds and Mixtures Notes to answer the following:

1. What is the smallest piece of an element?
2. How is a compound formed?
3. What is the smallest piece of a compound?
4. Give 2 examples of a compound.
5. Name 3 ways to separate a compound.
6. What do elements and compounds have in common?
7. What is the difference between an element, compound, and a mixture?
8. What are the 2 types of mixtures? Give an example of each.
9. Name 4 ways to separate a mixture.

Use your Unit 4 Solutions Notes to answer the following:

10. How is a solution formed?
11. What are the 2 parts of a solution?
12. What is the solute and solvent in iced tea?
13. What does it mean if something is soluble? Give an example.
14. What does it mean if something is insoluble? Give an example.
15. What are two words to describe the concentration of a solution?
16. Draw a picture of a dilute solution and a picture of a concentrated solution.
17. Name three ways to increase solubility.
18. Name three ways to decrease solubility.