

**The properties of mixtures and fluids can be explained by the particle model of matter.**

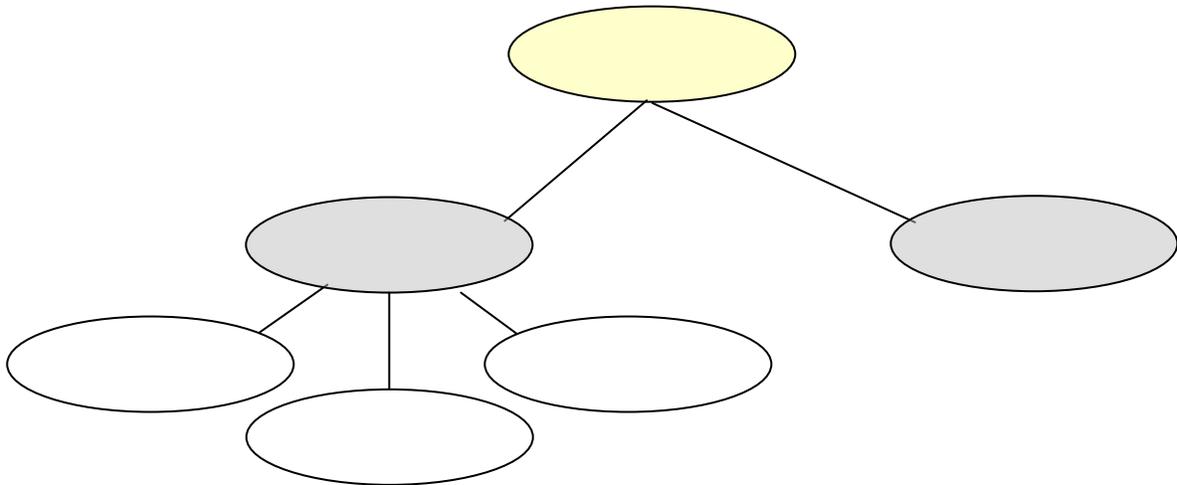
Student Name \_\_\_\_\_

Class \_\_\_\_\_

**Pure substances and Mixtures**

1. Use the following words to complete a visual organizer, showing the relationships between and among the words provided. Use each word only once.

**Pure Substances, Matter, Solutions, Mixtures,  
Mechanical Mixtures, Suspensions and Colloids**



2. Mixtures can be made with solids, liquids or gases. The kind of mixture or solution that is referred to as **homogeneous** is a mixture or solution which ...
- is clear with each part visible
  - is cloudy with many parts visible
  - appears as a single substance**
  - all the parts are visible all the time
3. For some fluids, **paper chromatography** is a test that determines whether a substance is a ...
- mixture or a colloid
  - mixture or suspension
  - colloid or suspension
  - pure substance or a mixture**
4. An insulating foam is sprayed into cracks to seal them. The gas and liquid together make a ...
- colloid**
  - suspension
  - mechanical mixture
  - solution
5. At school we use coffee filter paper to investigate the process of paper chromatography. The filter paper is called a ...
- chromatogram**
  - chromatograph
  - filtrate
  - pH indicator

## Concentration and Solubility

6. When a substance, such as sugar, dissolves in water, the particles **intermingle**. This is possible because the particles of sugar ...
- A. are pure
  - B. have strong attractions to each other
  - C. have spaces between them**
  - D. are vaporized
7. In **concentrated** solutions, there are large amounts of ...
- A. empty spaces
  - B. diluted particles
  - C. solvent in the solute
  - D. solute in the solvent**
8. **Concentration** amounts can be stated in many different ways. 50g per 100ml is one common way. Another way is to express it as a **percent**, like they do in juice containers. If an apple juice Tetra Pak had 20 grams of apple juice per 100ml, the concentration would be ...
- A. 2%
  - B. 8%
  - C. 20%**
  - D. 80%
9. When comparing concentrations of different solutions, it is necessary to compare the concentrations in the same volume. Which of the following solutions would have the **highest** concentration?
- A. 5.6g per 10ml**
  - B. 12g per 25ml
  - C. 25g per 50ml
  - D. 50%
10. The difference between a **saturated** and **unsaturated** solution is that an unsaturated solution can dissolve more ...
- A. solvent
  - B. solute**
  - C. particles
  - D. spaces
11. Solubility is the maximum amount of solute that you can add to a fixed volume of solvent at a given ...
- A. depth
  - B. time
  - C. temperature**
  - D. place

## Factors Affecting Solubility

12. Solubility is affected by a number of **factors** including all of the following, EXCEPT ...
- A. temperature
  - B. agitation**
  - C. type of solute
  - D. type of solvent
13. Water is referred to as the **universal solvent**, because it can dissolve so many different substances. To identify a solution that contains water as the solvent, chemists use the term ...
- A. aqueous**
  - B. agitated
  - C. watery
  - D. evaporated

14. A common solution in which the solute is solid and the solvent is liquid is ...  
 A. antifreeze  
 B. air  
 C. rubber cement  
**D. saltwater**
15. For most common solid or liquid substances, solubility increases as temperature increases. This is NOT the case with ...  
 A. alcohol  
**B. gases**  
 C. ethanol  
 D. water

**The Particle Model and the Behavior of Mixtures**

16. **Diffusion** occurs when the particles of a solute ...  
 A. are heated, disperse and are then cooled very quickly  
**B. fill the spaces between the particles of the solvent**  
 C. are dissolved by a change of state that occurs in the solvent  
 D. attach to particles of the solvent and then particles of the solute
17. Dissolving occurs when a solute and a solvent are added together and they mix together appearing to be one substance. The factors that affect the **rate of dissolving** are ...  
 A. type of solute, type of solvent, temperature  
 B. agitation, temperature, solubility  
**C. temperature, size of pieces, agitation**  
 D. type of agitation, temperature, type of solvent

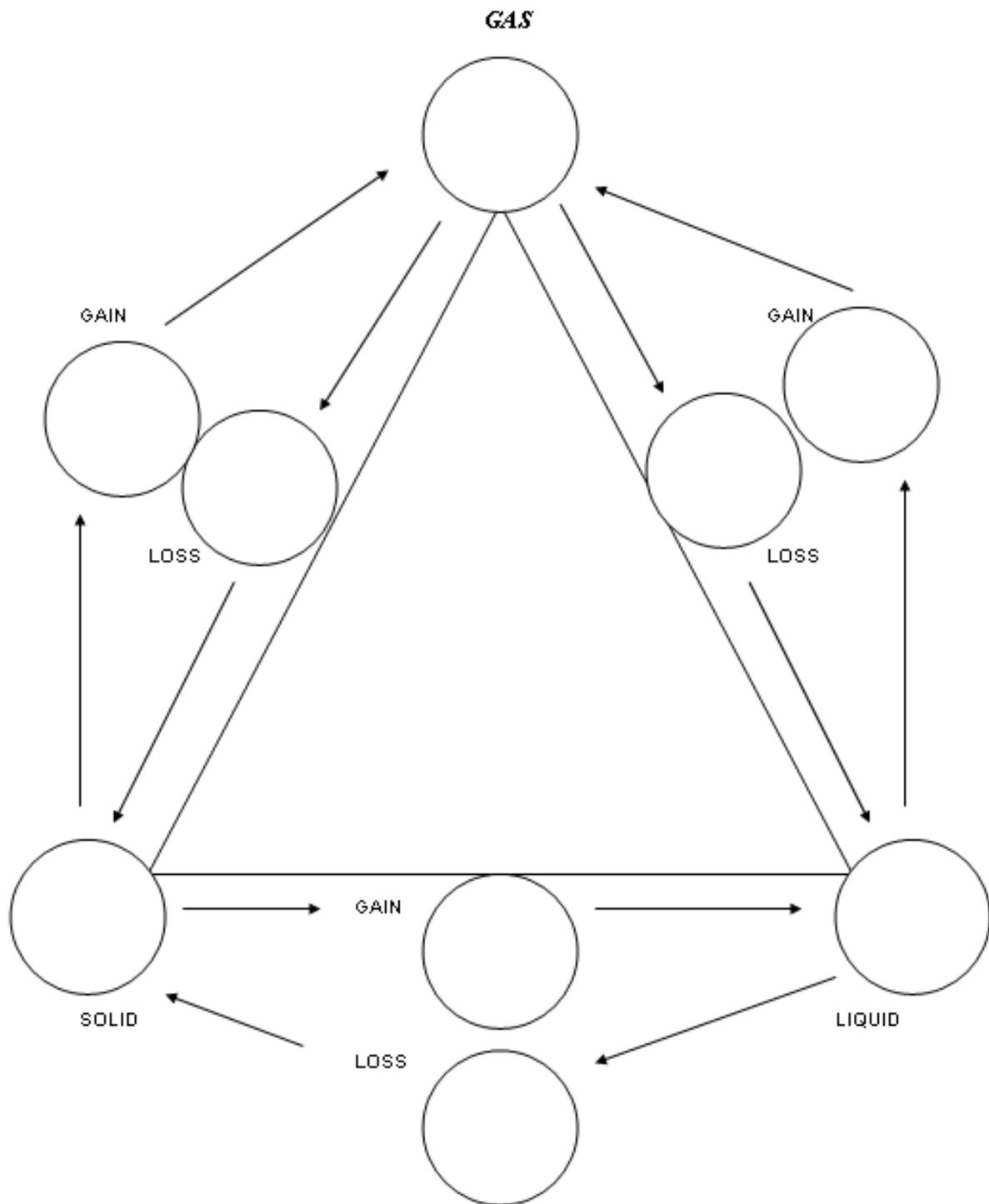
18. The 4 main points of the **Particle Model** are as follows:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

19. To make particles dissolve faster, this occurs. It is an action describing 'rapid stirring' \_\_\_\_\_

20. When thinking about factors that affect the rate of dissolving, the factor which takes into account the exposed surface area is the \_\_\_\_\_ .

21. Illustrate the CHANGES in STATE using the PARTICLE MODEL and what occurs when Energy is Gained or Lost by the particles.



**ANSWER KEY**

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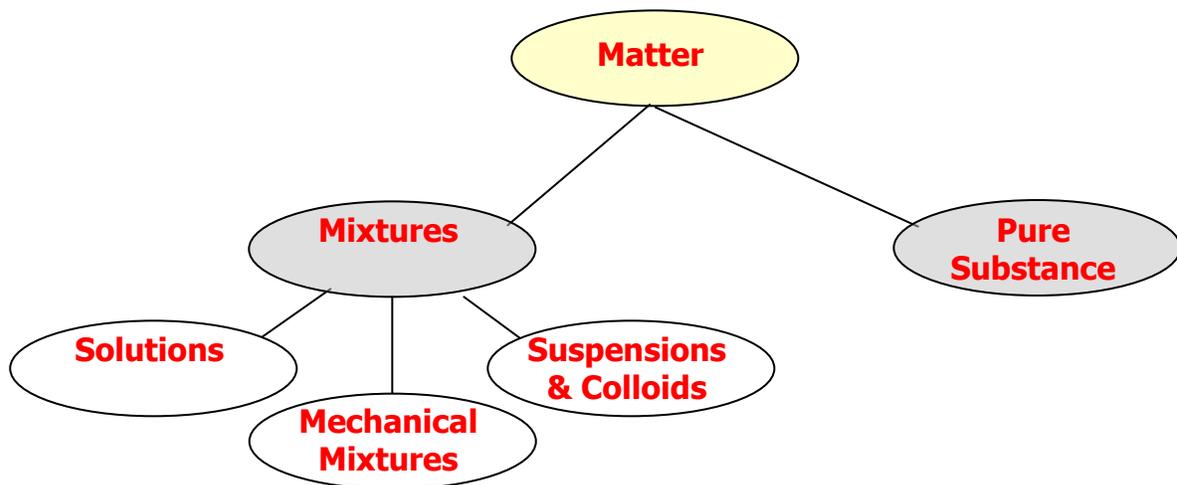
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A. type of solute, type of solvent, temperature  
B. agitation, temperature, solubility  
**C. temperature, size of pieces, agitation**  
D. type of agitation, temperature, type of solvent
18. The 4 main points of the **Particle Model** are as follows:
- 5. All matter is made up of tiny particles**
  - 6. The particles are always moving (have energy)\_**
  - 7. The particles have attractions to other particles**
  - 8. The particles have space between them**
19. To make particles dissolve faster, this occurs. It is an action describing 'rapid stirring' **agitation** \_\_\_\_
20. When thinking about factors that affect the rate of dissolving, the factor which takes into account the exposed surface area is the **size of the pieces** \_\_\_\_\_ .

21. Illustrate the CHANGES in STATE using the PARTICLE MODEL and what occurs when Energy is Gained or Lost by the particles.

