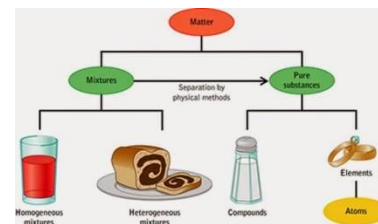


# Pure Substances and Mixtures 1:

## What is Matter? Particle Theory/States



Watch the following YouTube videos; <https://www.youtube.com/watch?v=bMbmQzV-Ezs> and <https://www.youtube.com/watch?v=ukaeyMU2RoM> then look on pg. 10-16 in the textbook. **Discuss and then answer the following questions as a partnership.**

1. What is **matter**?

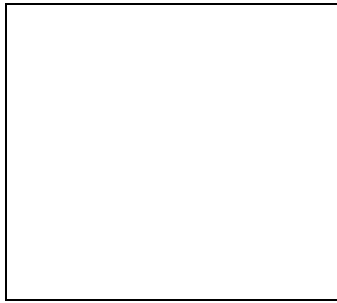
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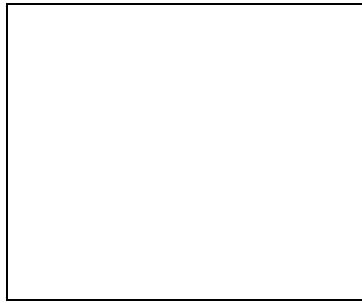
2. What are the 5 statements of the **Particle Theory**?

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

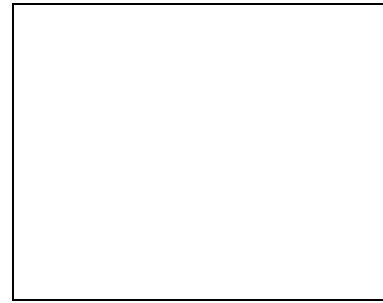
3. In the boxes below, draw what the **particles** look like in a **Solid**, **Liquid**, and **Gas**.



SOLID



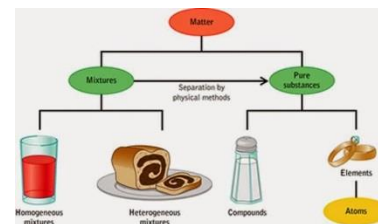
LIQUID



GAS

# Pure Substances and Mixtures 2:

## Pure Substances/Mixtures Mech. Mixtures/Solutions



Watch the following YouTube videos; <https://www.youtube.com/watch?v=88MBCyiaPSM>, <https://www.youtube.com/watch?v=pnpmPDa3tbM> and <https://www.youtube.com/watch?v=AOgH5ktwoDE> then look on pg. 20-27 in the textbook.  
**Discuss and then answer the following questions as a partnership.**

1. What is a **pure substance**? Draw a **picture** in the box showing its **particles**.

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Give 4 **examples** of **pure substances**:

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2. What is a **mixture**? Draw a **picture** in the box showing its **particles**.

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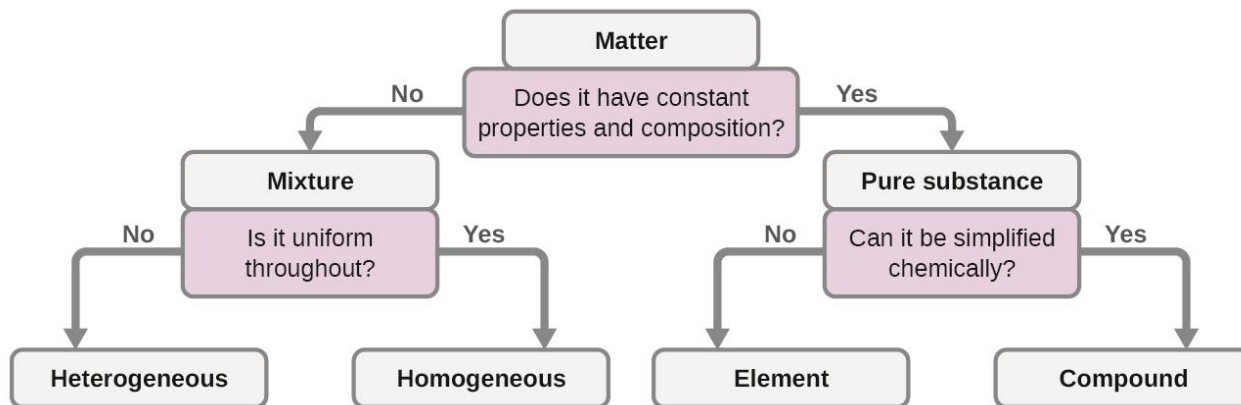


Give 4 **examples** of **mixtures**:

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3. In the following diagram, it shows how we **classify matter**.  
Below the final items in the chart, give **4 different examples** of each.



Examples:

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Examples:

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Examples:

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Examples:

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4. **Define** each of the following terms (think about your examples from above):

**Homogeneous Mixture (Solution)**

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**Heterogeneous Mixture (Mechanical Mixture)**

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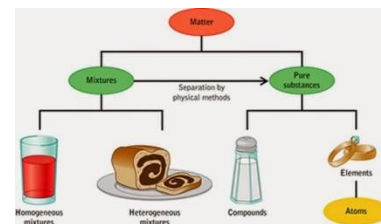
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# Pure Substances and Mixtures 3:

## Solutes and Solvents Dissolving



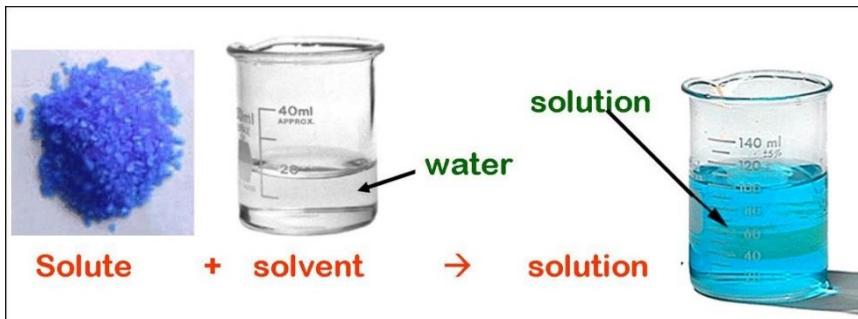
Watch the following YouTube videos;

<https://www.youtube.com/watch?v=hydUVGUbyvU> and

<https://www.youtube.com/watch?v=tt-mx25t7rA> then look on pg. 36-41 in the textbook.

**Discuss and then answer the following questions as a partnership.**

1.



What is a **solute**?

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What is a **solvent**?

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2. Why is **water** called a “**Universal Solvent**”?

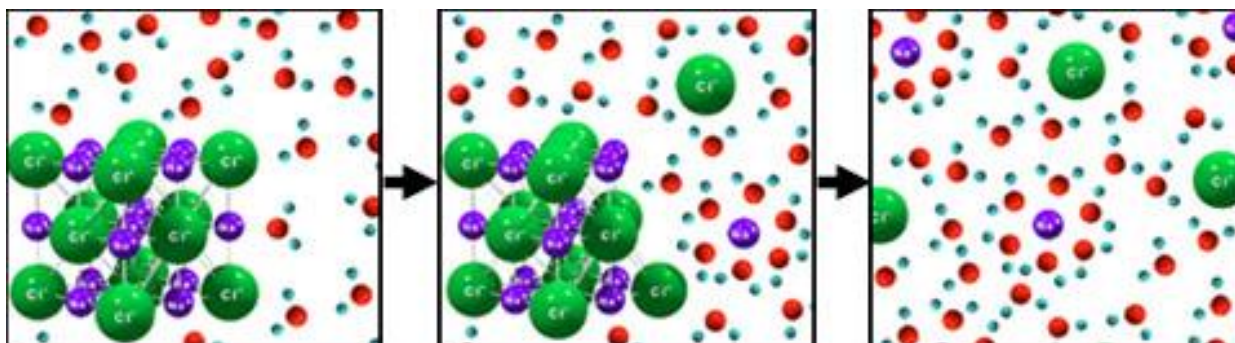
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3. The following picture shows how salt dissolves in water. Based on what we have talked about in class, **describe what is happening** with the **salt particles in the water**.



Salt just put into water

Salt begins to dissolve

Salt is fully dissolved

**What is happening?** (Talk about the particles ....)

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4. Why will the **overall volume** of the solution (salt and water) be a **little less** than what you might expect?

i.e. **50 mL** of salt + **250 mL** of water → **275 mL** of salt solution

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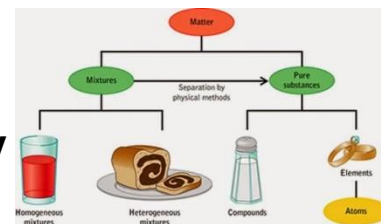
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# Pure Substances and Mixtures 4:

## Concentration and Solubility Solubility

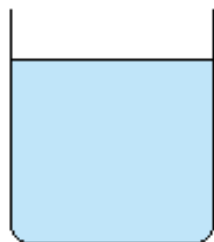


Watch the following YouTube videos;

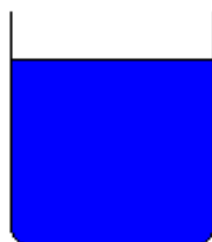
[https://www.youtube.com/watch?v=hut2Qujue\\_c](https://www.youtube.com/watch?v=hut2Qujue_c) and

<https://www.youtube.com/watch?v=PjUNnTPor48> then look on pg. 42-44 in the textbook.

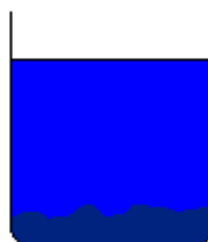
**Discuss and then answer the following questions as a partnership.**



*Dilute solution*



*Concentrated solution*



*Saturated solution*

1. What is a **concentrated solution**?

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2. What is a **dilute solution**?

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3. What is a **saturated solution**?

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4. Calculate the **CONCENTRATION** of a solution if **12g of sugar** is dissolved in **250mL of water**.

REMEMBER ...

$$\text{concentration} = \frac{\text{mass of solute in grams}}{100 \text{ mL of solution}}$$

5. What is **solubility**?

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6. Calculate the **SOLUBILITY** of a solution if it can dissolve no more than **36g of salt** in **500mL of water** (at room temperature).

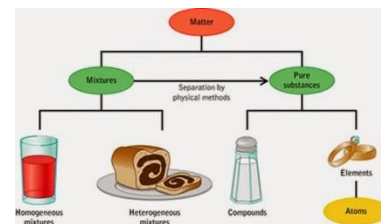
REMEMBER ...

$$\text{solubility} = \frac{\text{maximum mass of solute that will dissolve, in grams}}{100 \text{ mL solvent at a certain temperature}}$$



# Pure Substances and Mixtures 5:

## Separating Mixtures and Mechanical Mixtures



Watch the following YouTube videos;

<https://www.youtube.com/watch?v=4DaxYArKOOA> and

<https://www.youtube.com/watch?v=KORaKEYU9LU> then look on pg. 58-61 in the textbook.

**Discuss and then answer the following questions as a partnership.**

1. Describe the 5 methods for separating mechanical mixtures.

### 1. SORTING

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### 2. FLOATING and SETTLING

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### 3. USING A MAGNET

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### 4. SIEVES and FILTERS

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## 5. DISSOLVING

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6. For each of the following **mechanical mixtures**, explain **HOW** you could **separate** it.

a) Salt and sand

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b) Sand and gravel

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c) M&Ms

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d) Metals and plastics

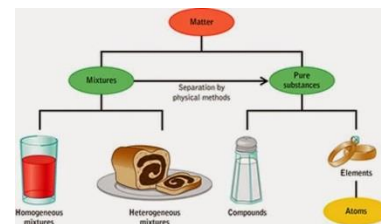
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# Pure Substances and Mixtures 6:

## Separating Solutions Mixtures in Industry



Watch the following YouTube videos;

<https://www.youtube.com/watch?v=IGMeYh5cuuc> ,

<https://www.youtube.com/watch?v=26AN1LfbUPc> ,

<https://www.youtube.com/watch?v=3wyhzKX97Vk> , and

<https://www.youtube.com/watch?v=jS89td3gc8o> then look on pg. 67-76 in the textbook.

**Discuss and then answer the following questions as a partnership.**

1. **Explain** each of the following separation techniques:

### Separating Solutions by Evaporation

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### Separating Solutions by Distillation

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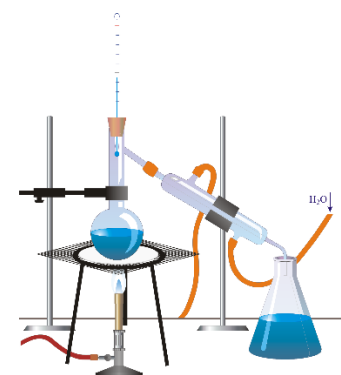
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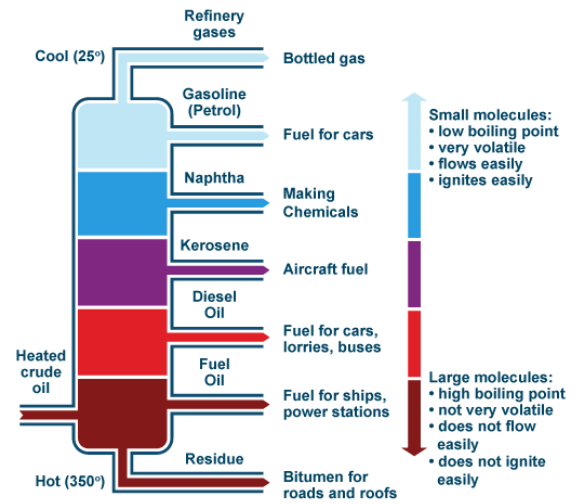
2. How are **wheat grains purified** and **separated**?

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



3. What **method of separating** do we use to refine **petroleum**?

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



4. What **separation technique** is used with mining **Uranium**?

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

