



# DO NOW LABEL NEXT LEFT AND RIGHT PAGES PURE SUBSTANCES AND MIXTURES

On the LEFT PAGE:

Classify each of the following as a pure substance or a mixture.

Iron

Rust ( $\text{Fe}_2\text{O}_3$ )

Coffee

Blood

Chocolate chip cookie dough

Milk



# PURE SUBSTANCES AND MIXTURES



# Benchmarks :

- **SC.8.P.8.9 Distinguish among mixtures (including solutions) and pure substances. (Cognitive Complexity : Moderate)**
  - ***SC.8.P.8.5 Recognize that there are a finite number of elements and that their atoms combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter. AA (Cognitive Complexity: Low)***
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# The Nature of Matter

*Matter* is a term used to describe anything that has mass and takes up space.



# Pure Substance (Element)

- A substance made of only one element (atom).
- Example:
  - Iron Pan
  - Gold Ring
  - Aluminum Foil
  - Helium Balloon



# Pure Substance (Compound)

- Two or more elements that are chemically bonded together.
- Example:
  - Salt ( $\text{NaCl}$ )
  - Water ( $\text{H}_2\text{O}$ )
  - Sugar ( $\text{C}_6\text{H}_{12}\text{O}_6$ )



# Heterogeneous Mixture

- Two or more substances that are combined **PHYSICALLY**, but not chemically bonded. You get **DIFFERENT** amounts in each sample.
- Example:
  - Chex Mix
  - Italian Dressing
  - Concrete



# Question:

- If you grab a handful of Chex Mix, will you get an equal amount of pretzels, rice chex, wheat chex, peanuts, or bagel chips?

- NO! You will normally get a TON of pretzels!

Grr...



# Homogeneous Mixture (Solution)

- When one substance is dissolved throughout another substance in equal amounts. You get SAME amounts in each sample.
- Example:
  - Coffee
  - Air
  - Sweet Tea



# Homogenized Milk



# Unhomogenized Milk





## Video Clip: Homoginization

- <http://www.youtube.com/watch?v=r0rCEBPg05Q>





# Question:

- If you breathe in air, how much nitrogen, oxygen and carbon dioxide are in each breath?
  - The same amount! Each breath will have:
    - $\approx 78\%$  Nitrogen
    - $\approx 21\%$  Oxygen
    - $\approx \text{CO}_2$ , water vapor, and other gases.
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