

Dec 4, 2014

PURPOSE - WHAT ARE TWO SPECIFIC
WAYS TO TURN A MIXTURE
INTO A SUBSTANCE?

WARMUP (FINISH):

SUBSTANCES ARE ...

MIXTURES ARE ...

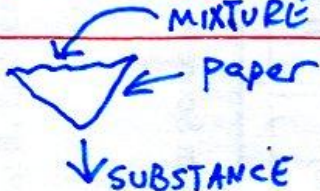
DRAW A PARTICLE DRAWING

| SUBSTANCE: | MIXTURE: |
|------------|----------|
| | |

SEPARATIONS

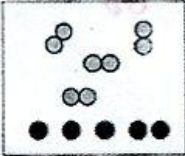

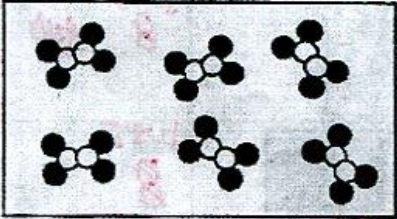
There are hundreds of methods for moving one substance away from another.

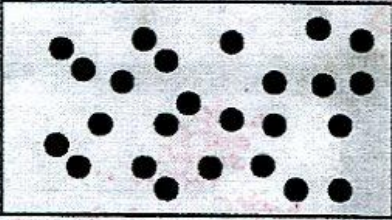
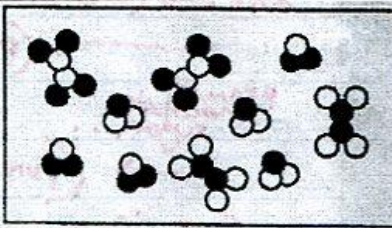

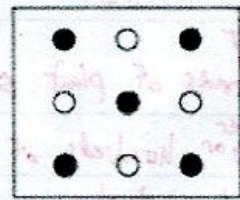
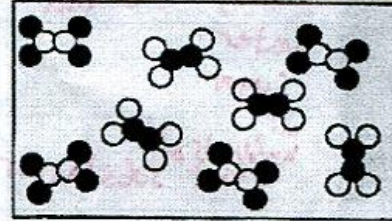
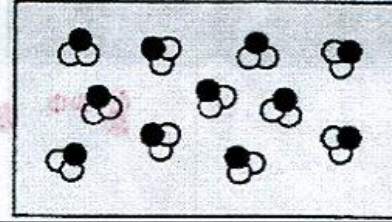
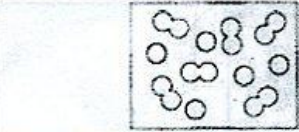
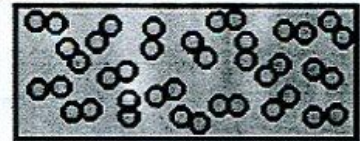
All are based on finding a property that makes one substance different from the others.

| Name | LOOKS LIKE MIXTURE | WORKS BECAUSE OF THIS DIFFERENCE |
|---------------------|---|----------------------------------|
| Filtration |  | DIFFERENT SOLUBILITY |
| <u>Distillation</u> | | BOILING POINTS |

Name ANSWERS Pd _____ Date _____

| We think this stuff is | Name of stuff | If you said it's a mix, what's it a mix of? |
|---|--|--|
| <input type="checkbox"/> a substance <input checked="" type="checkbox"/> a mix of substances | a hot serving of (Cinnamon Raisin Oatmeal) | water oats sugar raisins... |
| <input type="checkbox"/> a substance <input checked="" type="checkbox"/> a mix of substances | Plain hot oatmeal | water oats → (oats are a mix of carbs, fiber) |
| <input type="checkbox"/> a substance <input checked="" type="checkbox"/> a mix of substances | a sheet of aluminum foil | → (pure aluminum) |
| <input type="checkbox"/> a substance <input checked="" type="checkbox"/> a mix of substances | Snickers® | peanuts chocolate sugar... |
| <input type="checkbox"/> a substance <input checked="" type="checkbox"/> a mix of substances | steam | → (pure H ₂ O) |
| <input checked="" type="checkbox"/> a substance <input type="checkbox"/> a mix of substances | an iron frying pan | pure iron |
| <input type="checkbox"/> a substance <input checked="" type="checkbox"/> a mix of substances | hot tea (after you take the tea bag out) | water and hundreds of plant substances |
| <input type="checkbox"/> a substance <input checked="" type="checkbox"/> a mix of substances | an apple | water sugar, hundreds of plant substances |
| <input type="checkbox"/> a substance <input checked="" type="checkbox"/> a mix of substances | Pepsi® | sugar water, etcetera |
| <input type="checkbox"/> a substance <input checked="" type="checkbox"/> a mix of substances | water with sugar dissolved in it | water sugar |
| <input type="checkbox"/> a substance <input checked="" type="checkbox"/> a mix of substances | very smooth peanut butter | oil hundreds of plant substances |

| We think this stuff is | Picture of stuff | If you said it's a mix, what's it a mix of? (draw one of each type of particle) |
|---|---|--|
| <input type="checkbox"/> a substance <input checked="" type="checkbox"/> a mix of substances |  |  |
| <input checked="" type="checkbox"/> a substance <input type="checkbox"/> a mix of substances |  | |

| | | |
|---|---|--|
| <input checked="" type="checkbox"/> a substance <input type="checkbox"/> a mix of substances |  | <p style="color: red;">H₂O</p> |
| <input type="checkbox"/> a substance <input checked="" type="checkbox"/> a mix of substances |  |  |
| <input type="checkbox"/> a substance <input checked="" type="checkbox"/> a mix of substances |  | <p style="color: red;">O and H</p> |
| <input type="checkbox"/> a substance <input checked="" type="checkbox"/> a mix of substances |  | <p style="color: red;">H₂O and H</p> |
| <input checked="" type="checkbox"/> a substance <input type="checkbox"/> a mix of substances |  | <p style="color: red;">JUST H₂O</p> |
| <input type="checkbox"/> a substance <input checked="" type="checkbox"/> a mix of substances |  | <p style="color: red;">"8" AND "O"</p> |
| <input checked="" type="checkbox"/> a substance <input type="checkbox"/> a mix of substances |  | <p style="color: red;">JUST H₂O</p> |

today's lab, due Friday at the end of class:

Dear Young Chemist,

Allow me to introduce myself. I am a well-funded food charity that distributes SUBSTANCES* such as sugar and water to needy parties around the world. My organization recently received two very generous donations of sugar and water. Unfortunately we discovered that both donations are MIXTURES**.

I am soliciting your skills as a knowledgeable chemist with the permission of your teacher. Could you conduct a small trial run to show me how we can purify my DIRTY SUGAR MIXTURE and then, do another small trial to show me how we can purify my DIRTY WATER MIXTURE.

Write a letter back to me (hand written is okay, one per chemistry student, signed and dated and looking like a letter, including "Dear so and so") telling me the following: a clear listing of the steps you followed, What you smelled and saw at each step, Whether the final result is a SUBSTANCE (explain with both words and a sketch), and list what you wish you could do differently to improve the steps, so my technicians can achieve success when they try to duplicate your work.

Thanky thanky,

Iain M. Banks

New York, NY

Due Friday, by the end of class