

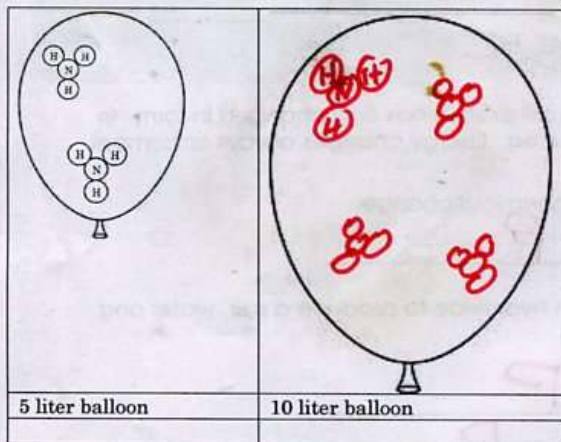


In a physical change, the original substance still exists, it has only changed in form. In chemical change, a new substance is produced. Energy changes always accompany chemical changes.

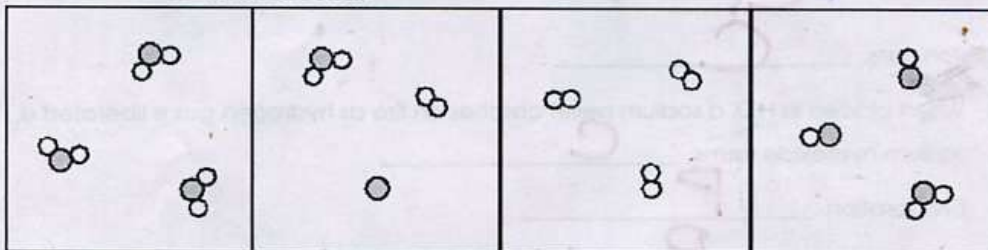
Classify the following as being a physical or chemical change.

1. Sodium hydroxide dissolves in water. P
2. Hydrochloric acid reacts with potassium hydroxide to produce a salt, water and heat. C
3. A pellet of sodium is sliced in two. P
4. Water is heated and changed to steam. P
5. Potassium chlorate decomposes to potassium chloride and oxygen gas. C
6. Iron rusts. C
7. When placed in H_2O , a sodium pellet catches on fire as hydrogen gas is liberated and sodium hydroxide forms. C
8. Evaporation P
9. Ice melting P
10. Milk sours. C!!!!
11. Sugar dissolves in water. P
12. Wood rotting C
13. Pancakes cooking on a griddle C!!!
14. Grass growing in a lawn P C!!!
15. A tire is inflated with air. P
16. Food is digested in the stomach. C
17. Water is absorbed by a paper towel. P

18. These balloons both contain NH_3 . Inside the balloon on the right draw an appropriate number of NH_3 molecules.

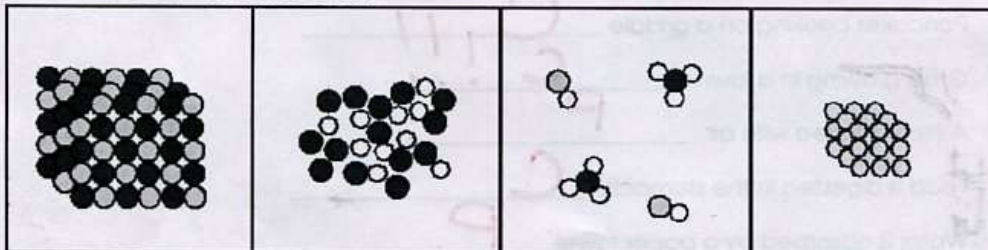


19. Consider the four containers below.



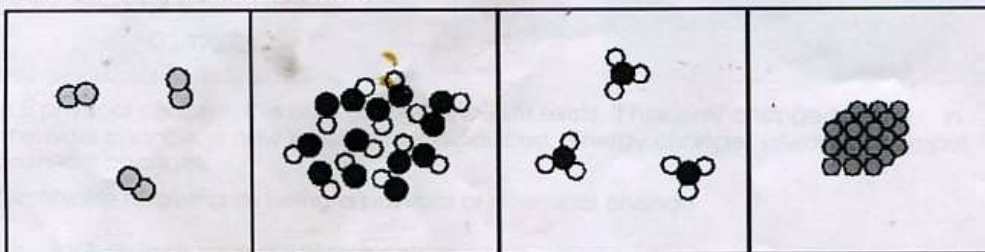
- a. Which of these are mixtures? B, D pure substances? A, C, ~~E~~
- b. Which contain only compounds? A, D only elements C

20. Consider the four containers below.



- a. Which of these are mixtures? BC pure substances? A, D
- b. Which contain only compounds? C only elements D

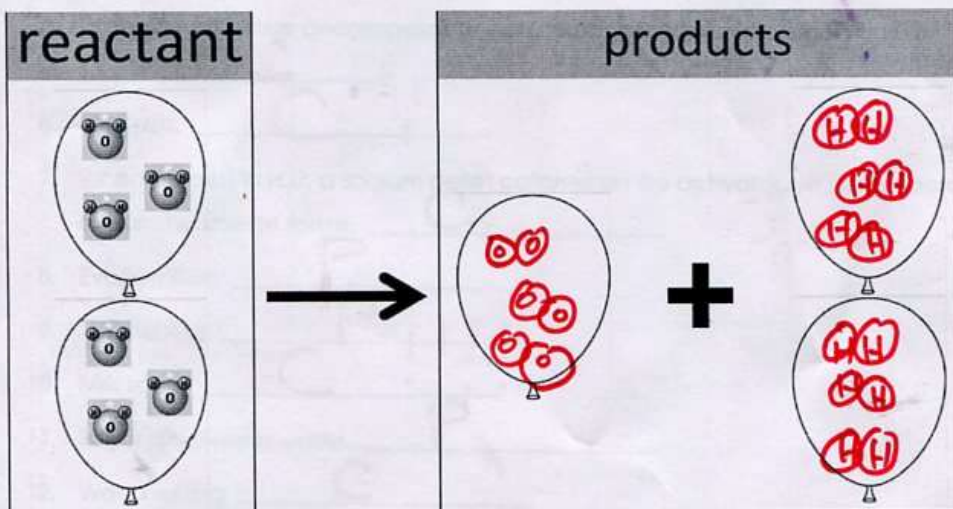
21. Consider the four containers below.



a. Which of these are mixtures? None! pure substances? all

b. Which contain only compounds? B, C only elements A, D

22. Which of the containers in #21 contain a gas? A, C a liquid B a solid D



23. A chemist took two balloons full of gas. She set them on fire. They created two different products. Product A is a substance that filled one balloon. Product B is a substance that filled two balloons. Draw molecules inside the three balloons showing what she created.

Hints:

- Avogadro's Principle: Equal sized boxes have the same number of gas molecules.
- The Law of Conservation of Mass: Any atoms that exist before the arrow must be the same as the number of atoms after the arrow.
- Assume all boxes are the same size.

Purpose:

Microscopically, what is in a bubble in water?

WARMUP:

1) What does heat do to water?

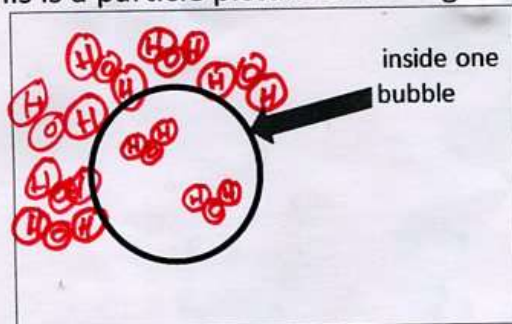
What we see:

Bubbles form when water boils.

This is a (physical? ~~chemical?~~) change.

**We know this because... no new substance was created. It's still H_2O .

This is a particle picture of boiling water:



2) What does electricity do to water?

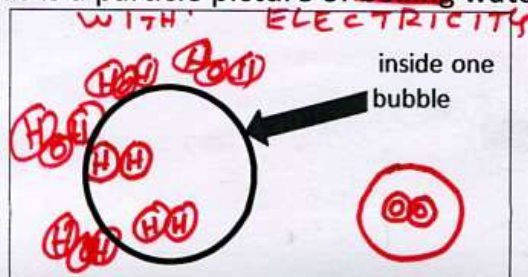
WIRES TOUCHING H_2O PRODUCE TWO GASES IN UNEQUAL AMOUNTS

What we see:

This is a (~~physical?~~ chemical?) change.

**We know this because... new substances form, that have new property.

This is a particle picture of ~~boiling~~ water:



Today:

- 1) Notes
- 2) Teacher Demonstration: Try putting live electricity into water!
- 3) Homework answers

Quiz tomorrow. I'm here every day, all lunch. I'm here Tuesday's and Thursday's after school.

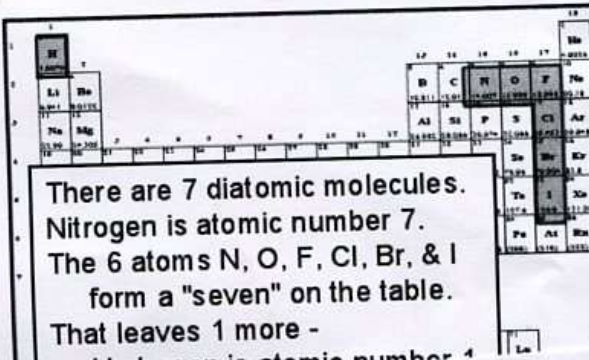
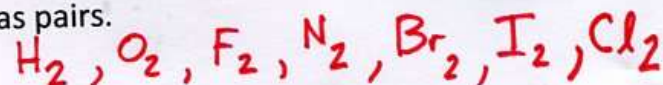
The Annual Play of Weston-Sussex High School



December 3-5 at 7pm
December 5 at 2pm
\$2 for students
\$5 for adults

east side

3) When pure, the following elements exist as pairs.



There are 7 diatomic molecules.
Nitrogen is atomic number 7.
The 6 atoms N, O, F, Cl, Br, & I form a "seven" on the table.
That leaves 1 more -
Hydrogen is atomic number 1

~~When~~ When pure, these exist as pairs BUT when with other elements, they can exist in any quantity.

4 a) What do coefficients and arrows mean?

