

Bell Work, Nov 11 - 14, 2013

Mixtures, Avogadro' Law, Dalton's Theory,
Moles,

Bell Work, Monday, Nov 11, 2013

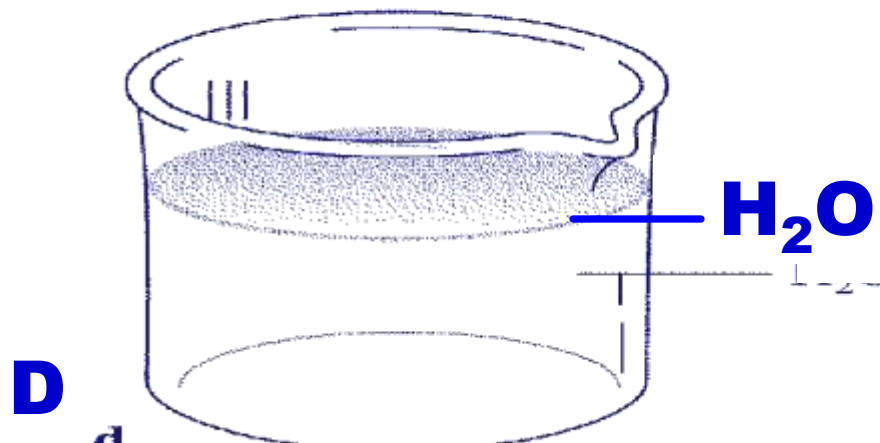
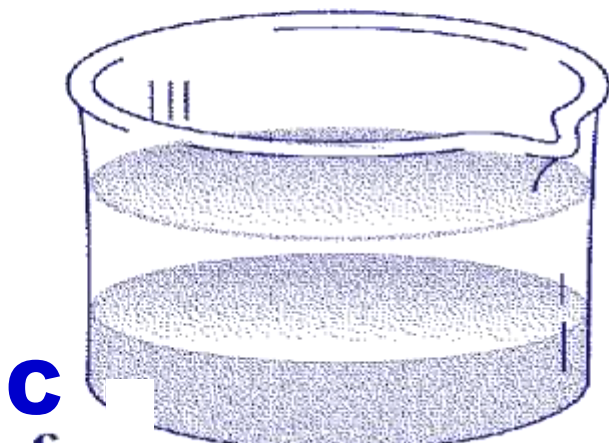
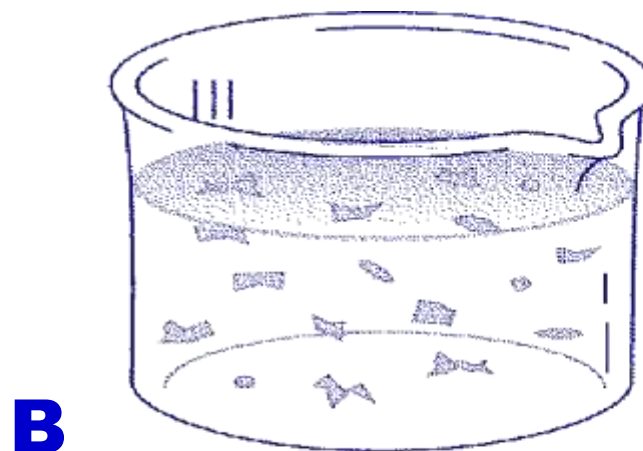
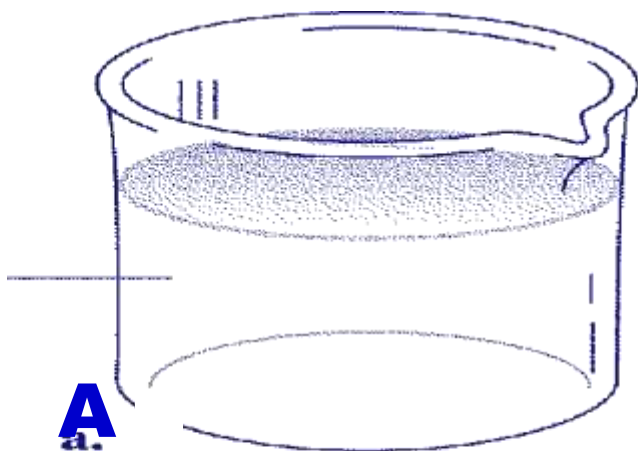
Draw the beakers.

1. Identify the homogeneous mixture(s)

2. Identify the heterogeneous mixture(s)

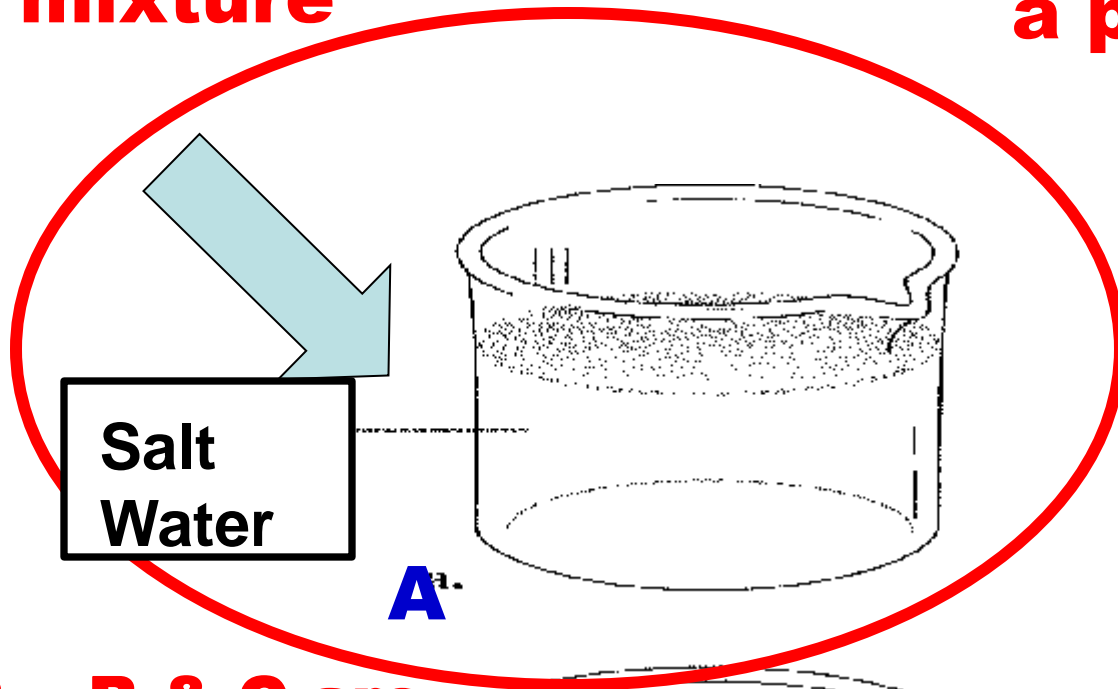
3. Which is not a mixture?

**Salt
water
solution**

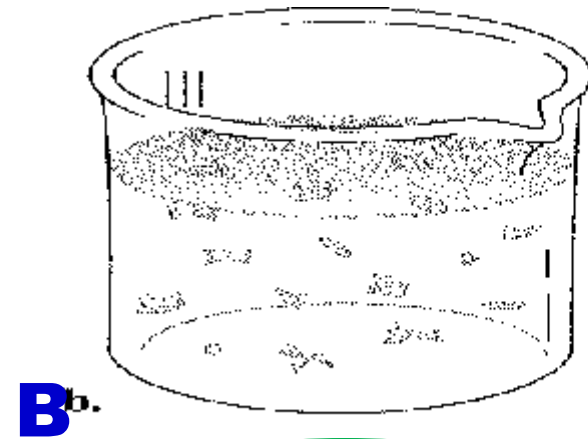


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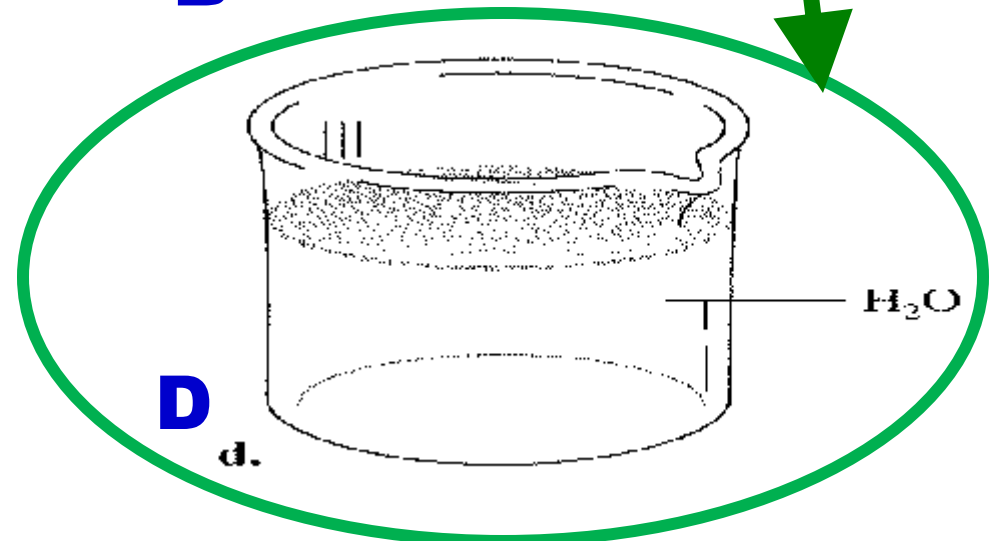
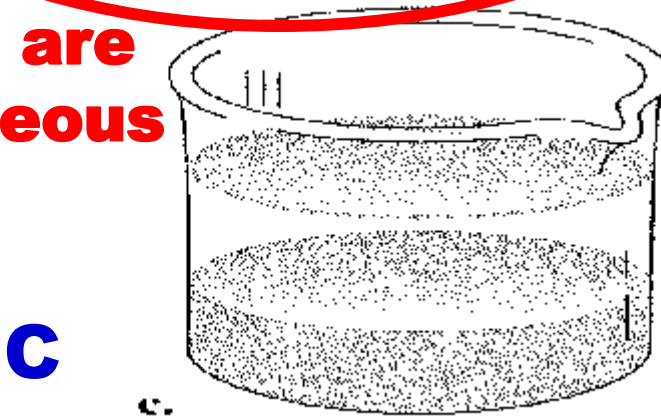
1. A is Homogeneous mixture



3. D: Not a mixture (it is a pure substance)



2. B & C are heterogeneous



4. This substance consists of two or more elements in a fixed mass ratio.

a. compound

c. element

b. pure substance

d. mixture

5. The composition of this substance is variable; its physical properties depend on the composition.

a. pure substance

c. compound

b. element

d. mixture

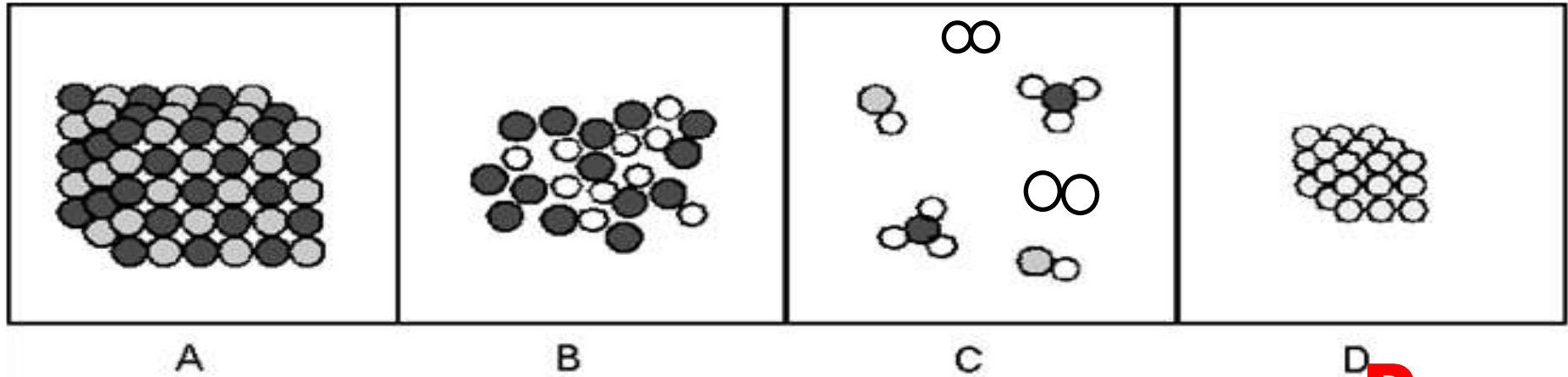
6. Explain why a magnet can separate iron atoms from the mixture but not from the compound.

Iron atoms still retain their magnetic property in the mixture, but not when compounded with sulfur atoms because

- the elements that make up a compound have different properties than the compound that is produced.

Tuesday, Nov 12, 2013

Unit 4, Worksheet 1, #6

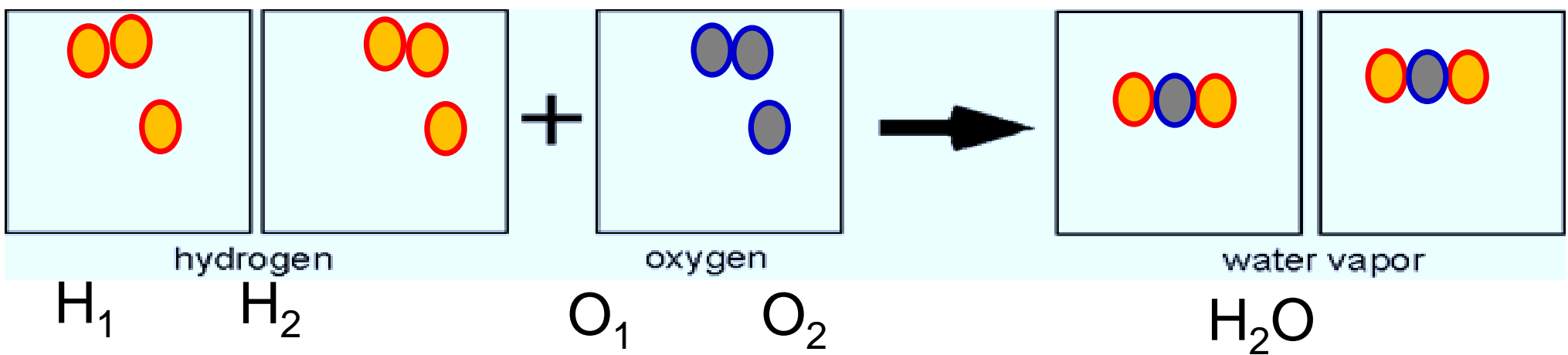


1. Which of the above is pure metal (element)? **D**
2. Which of the above is a mixture of molecules? **C**
3. Which of the above is a pure compound? **A**
4. A substance that cannot be broken down into simpler substances is a(n)

- | | |
|--------------------|--------------|
| a. atom. | c. compound. |
| b. element. | d. mixture. |

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5. Draw how two volumes of hydrogen gas react with one volume of oxygen gas to form two volumes of gaseous water.

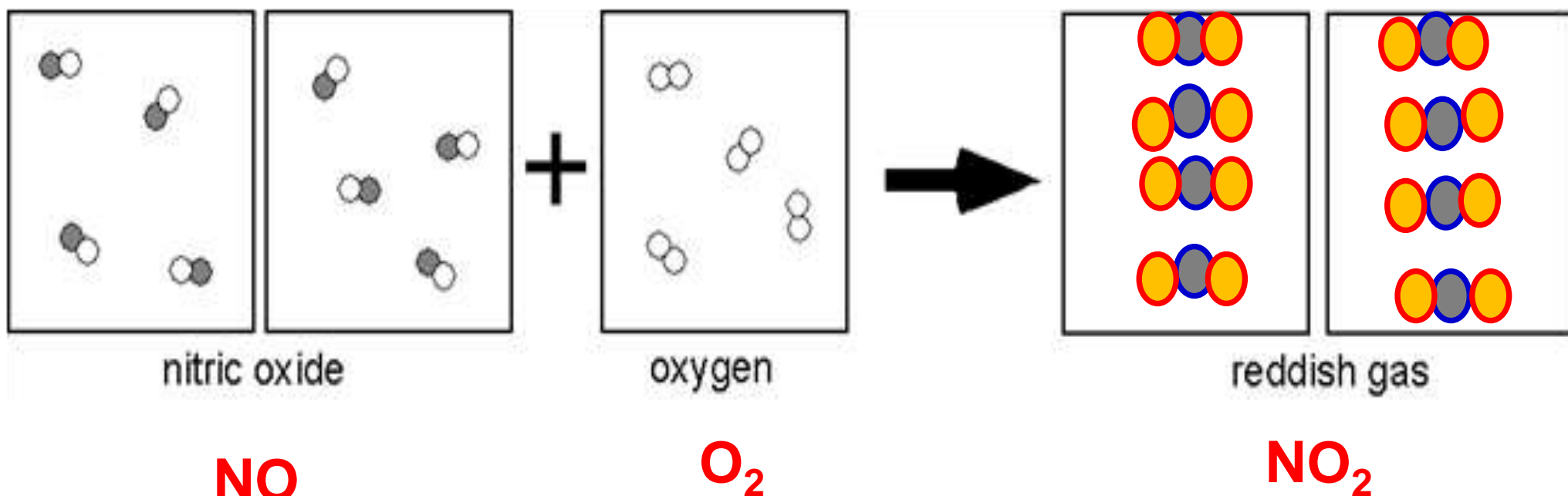


6. Explain why molecules of oxygen must have an even number of atoms.

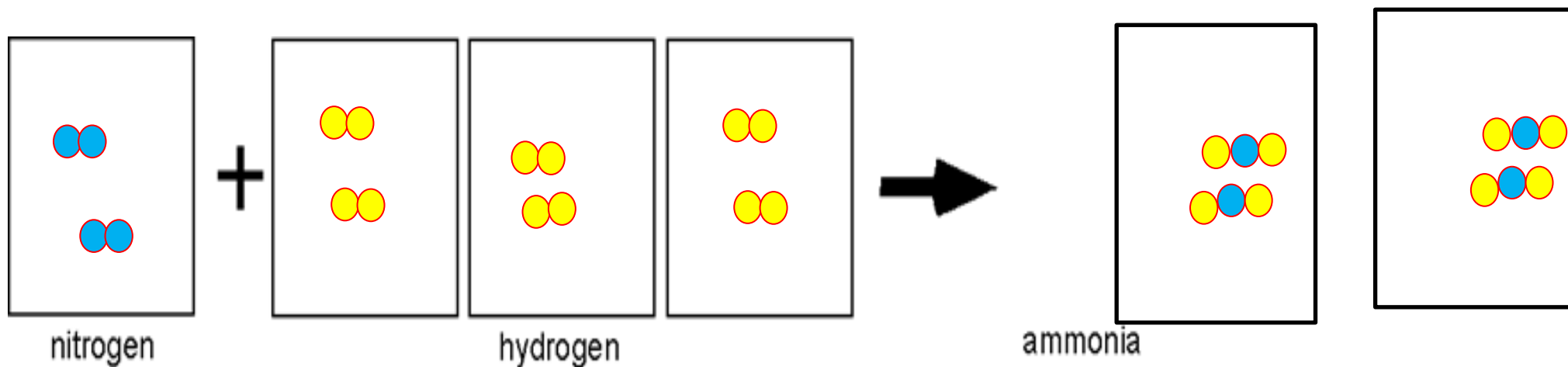
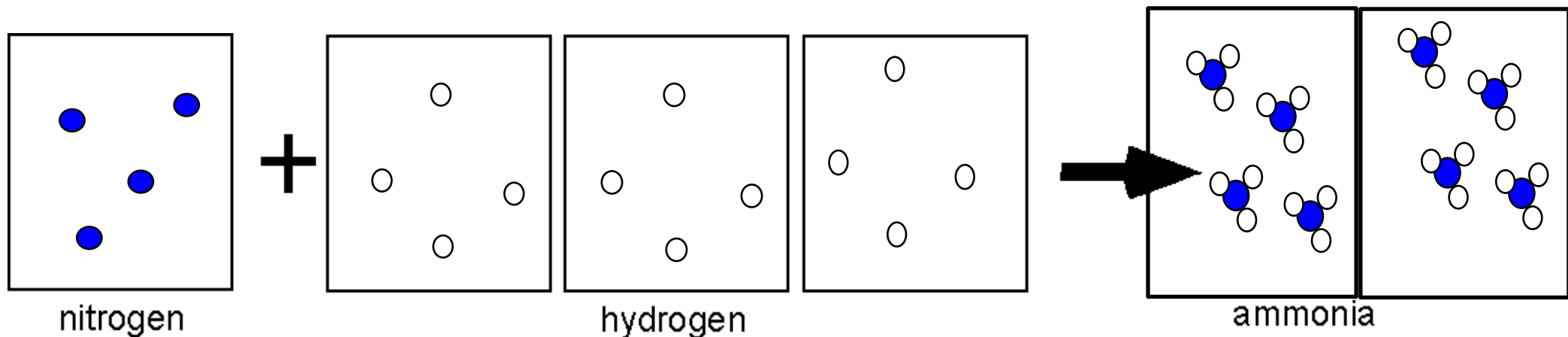
Oxygen molecules must have an even number of atoms in order for the contents of one container to split evenly into two containers.

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7. Two volumes of nitric oxide react with one volume of oxygen gas to form two volumes of a reddish-brown gas. Deduce the formula of this gas and sketch particle representations of its molecules.



Bell Work, Tuesday, Nov12, 2013



N₂

+

H₂



NH₃

Bell Work, Wednesday, Nov 13, 2013

1. Compounds of copper and oxygen:

Compound A: 79.9 g Cu / 20.1 g O

Compound B: 88.8 g Cu / 11.2 g O

a. Determine the value of the ratio in each compound.

A. 3.98 B. 7.93 Or 4:8

How does the mass ratio for compound B compare to that in compound A?

Double

c. Express these ratios as improper fractions. **A = 4/1** **B = 8/1**

Hypothesis 1

Atoms of Cu and O have the same mass

A

B

Hypothesis 2

Cu atoms are heavier than O atoms by the ratio in compound A.

A

B

1. State Avogadro's hypothesis>

- Equal volumes of gases contain the same number of molecules at the same pressure and temperature.
- Some pure elemental gases are clustered into pairs to form diatomic molecules

2. State the Law of Definite Proportions

Atoms combine in simple whole-number ratios.

If the ratio of atoms of each element in a compound is fixed, then it follows that the ratio of their masses is also fixed.

3. State the Law of Multiple Proportions

Whenever the same two elements form more than one compound, the different masses of one element that combine with the same mass of the other element are in the ratio of small whole numbers.

4. Describe the four main concepts of Dalton's Atomic Theory

- 1. All matter is composed of indivisible, indestructible particles called atoms.**
- 2. All atoms of a given element are identical; atoms of different elements have different properties.**
- 3. Chemical reactions involve the combination of atoms, not the destruction of atoms.**

This was an extremely advanced concept for its time; while Dalton's theory implied that atoms bonded together, it would be more than 100 years before scientists began to explain the concept of chemical bonding.

- 4. When elements react to form compounds, they react in defined, whole-number ratios.**