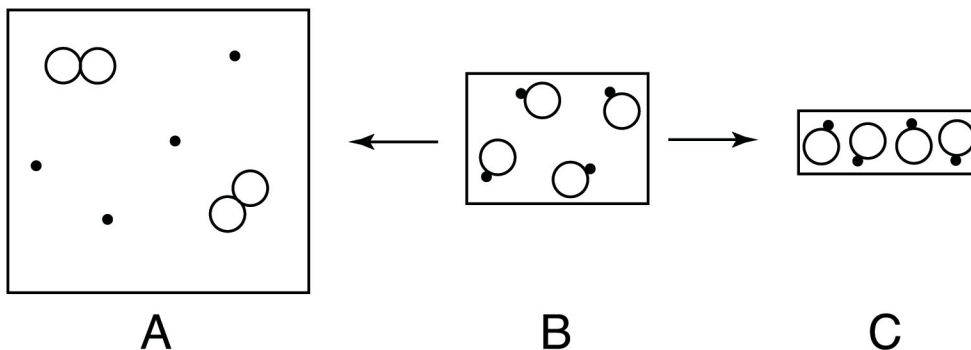


Conceptual Biology

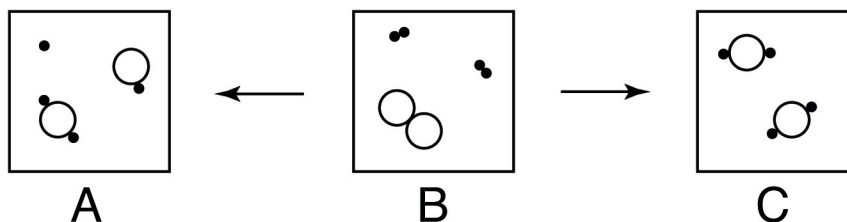
Chapter 2: The Chemistry of Life

The Submicroscopic

Each circle or dot represents an atom.



- | | | | |
|--|---------|---------|--------------|
| 1. How many molecules are shown in | A _____ | B _____ | C _____ |
| 2. How many atoms are shown in | A _____ | B _____ | C _____ |
| 3. Which represents a physical change? | B → A | B → C | (circle one) |
| 4. Which represents a chemical change? | B → A | B → C | (circle one) |
| 5. Which box(es) represent(s) a mixture? | A _____ | B _____ | C _____ |
| 6. Which box contains the most mass? | A _____ | B _____ | C _____ |
| 7. Which box contains the most air
between molecules? | A _____ | B _____ | C _____ |



- | | | | |
|---|---------|---------|--------------|
| 8. How many molecules are shown in | A _____ | B _____ | C _____ |
| 9. How many atoms are shown in | A _____ | B _____ | C _____ |
| 10. Which represents a physical change? | B → A | B → C | (circle one) |
| 11. Which represents a chemical change? | B → A | B → C | (circle one) |
| 12. Which box(es) represent(s) a mixture? | A _____ | B _____ | C _____ |
| 13. Which box contains the most mass? | A _____ | B _____ | C _____ |

Conceptual Biology

Chapter 2: The Chemistry of Life

Subatomic Particles

Three fundamental particles of the atom are the _____, _____, and _____. At the center of each atom lies the atomic _____, which consists of _____ and _____. The **atomic number** refers to the number of _____ in the nucleus. All atoms of the same element have the same number of _____, hence, the same atomic number.

Isotopes are atoms that have the same number of _____ but a different number of _____. An isotope is identified by its **atomic mass number**, which is the total number of _____ and _____ in the nucleus. A carbon isotope that has 6 _____ and 6 _____ is identified as carbon-12, where 12 is the atomic mass number. A carbon isotope having 6 _____ and 8 _____, on the other hand, is carbon-14.

1. Complete the following table:

Isotope	Number of...		
	Electrons	Protons	Neutrons
Hydrogen-1	1		
Chlorine-36		17	
Nitrogen-14			7
Potassium-40	19		
Arsenic-75		33	
Gold-197			118

2. Which results in a more valuable product — *adding* or *subtracting* protons from gold nuclei?
3. Which has more mass, a helium atom or a neon atom?
4. Which has a greater number of atoms, a gram of helium or a gram of neon?

