

# Introduction to the Periodic Table

**Atomic Number • Symbol • Atomic Weight  
Element • Compound • Mixture**

# I am Dmitri Mendeleev!



**Periodic Table**

- Group numbering is based on the new IUPAC system.
- Atomic weights are based on  $^{12}\text{C} = 12$  and conform to the 1995 IUPAC reported values. Number in ( ) indicates the isotope of longest half-life.

1																	18		
H																	He		
2													13	14	15	16	17	18	
Li	Be													B	C	N	O	F	Ne
3	4	5	6	7	8	9	10	11	12										
Na	Mg	Al	Si	P	S	Cl	Ar												
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36		
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr		
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54		
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe		
55	56	Lanthanides		58	59	60	61	62	63	64	65	66	67	68	69	70	71		
Cs	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Rn		
87	88	Actinides		90	91	92	93	94	95	96	97	98	99	100	101	102	103		
Fr	Ra	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr	Uuo		

Illustrated by Masahiko Suenaga  
<http://www.lobiq.jp/zeffels/>

# I made the PERIODIC TABLE !

# What is the PERIODIC TABLE?

- Shows all known elements in the universe.
- Organizes the elements by chemical properties.



A close-up photograph of a section of the periodic table. The elements shown are Carbon (C), Nitrogen (N), and Silicon (Si). Carbon is in the top-left cell, Nitrogen is in the top-right cell, and Silicon is in the bottom-left cell. The atomic numbers 6, 7, 14, and 15 are visible. The atomic weights 12.011 and 14.006 are also visible. The element symbols C, N, and Si are prominently displayed in large, bold letters.

6 C Carbon 12.011	7 N Nitrogen 14.006
14 Si	15

# How do you read the PERIODIC TABLE?

6
<b>C</b>
Carbon
12.01

- Atomic number
- Symbol
- Name
- Atomic Weight

# What is the **ATOMIC NUMBER**?

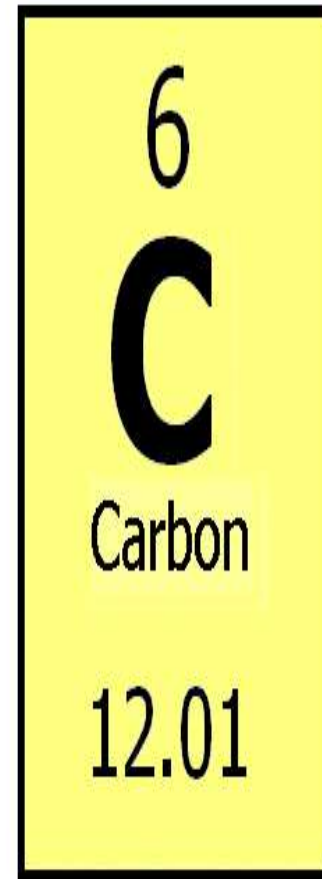
6
<b>C</b>
Carbon
12.01

— Atomic  
number

- o The number of protons found in the nucleus of an atom
- Or
- o The number of electrons surrounding the nucleus of an atom.

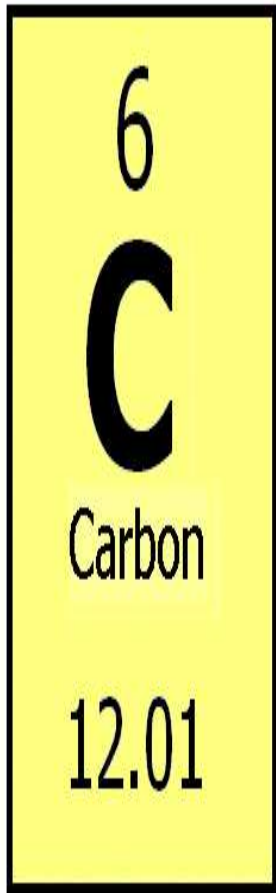
# What is the *SYMBOL*?

- o An abbreviation of the element name.



— Symbol

# What is the **ATOMIC WEIGHT**?



— Atomic  
Weight

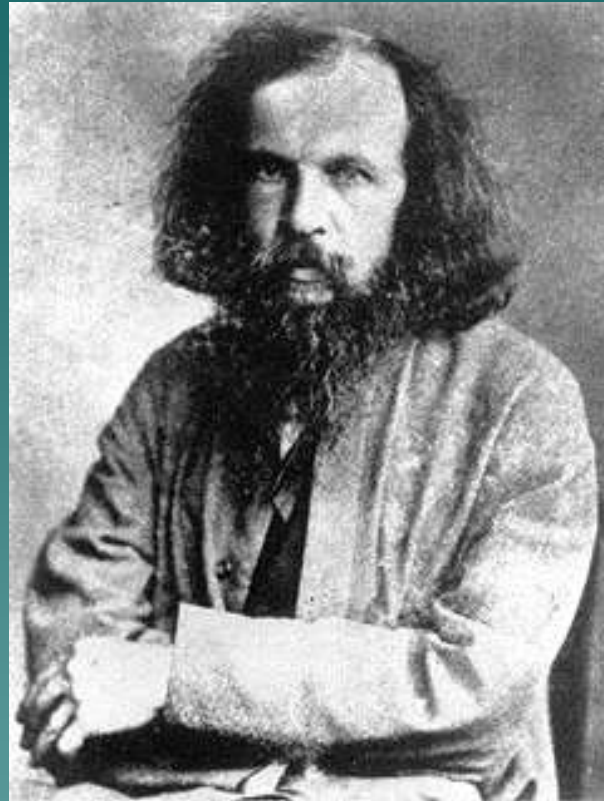
- o The number of protons and neutrons in the nucleus of an atom.

How do I find the number of protons, electrons, and neutrons in an element using the periodic table?

- o # of PROTONS = ATOMIC NUMBER
- o # of ELECTRONS = ATOMIC NUMBER
- o # of NEUTRONS = ATOMIC WEIGHT - ATOMIC NUMBER



Now you are almost as smart as  
I am!



But not as handsome!  
Man, I look GOOD!

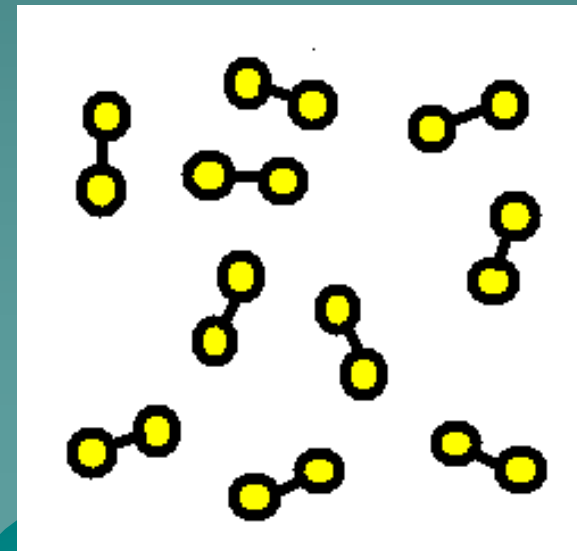
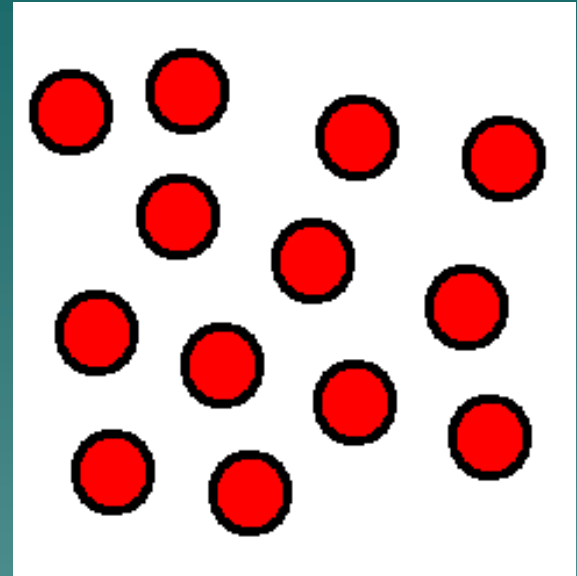
# Elements, Compounds, and Mixtures

A hand-drawn periodic table of elements. The elements are arranged in rows and columns, with each element's symbol in a colored box. The colors are: H (pink), He (light blue), Li (yellow), Be (pink), B (yellow), C (pink), N (light blue), O (light green), F (yellow), Ne (pink), Na (yellow), Mg (yellow), Al (light green), Si (light blue), P (pink), S (light blue), Cl (light green), Ar (yellow), K (light blue), Ca (light blue), Sc (light blue), Ti (pink), V (light blue), Cr (light green), Mn (yellow), Fe (pink), Co (light blue), Ni (light green), Cu (yellow), Zn (pink), Ga (light green), Ge (light green), As (light blue), Se (pink), Br (light blue), Kr (light green), Rb (light blue), Sr (light blue), Y (light blue), Zr (light blue), Nb (light blue), Mo (light blue), Tc (light blue), Ru (light blue), Rh (light blue), Pd (light blue), Ag (light blue), Cd (light blue), In (light blue), Sn (light blue), Sb (light blue), Te (light blue), I (light blue), Xe (light blue), Cs (light blue), Ba (light blue), La (light blue), Hf (light blue), Ta (light blue), W (light blue), Re (light blue), Os (light blue), Ir (light blue), Pt (light blue), Au (light blue), Hg (light blue), Tl (light blue), Pb (light blue), Bi (light blue), Po (light blue), At (light blue), Rn (light blue).

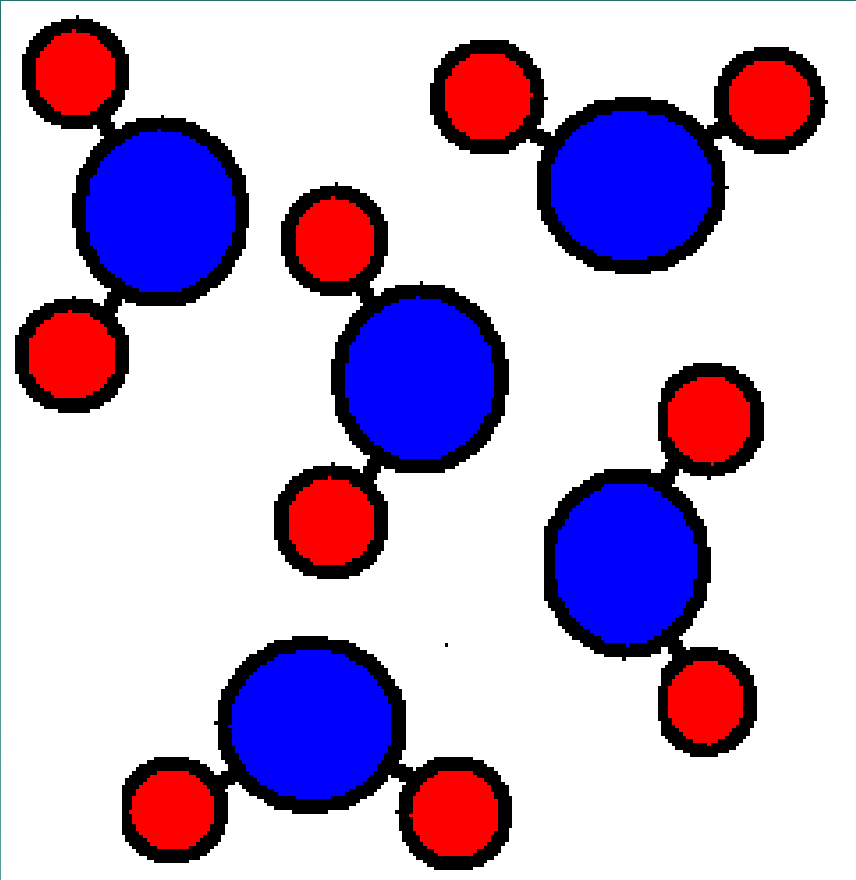
H																		He
Li	Be											B	C	N	O	F		Ne
Na	Mg											Al	Si	P	S	Cl		Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br		Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I		Xe
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At		Rn

# What is an ELEMENT?

- A substance composed of a single kind of atom.
- Cannot be broken down into another substance by chemical or physical means.



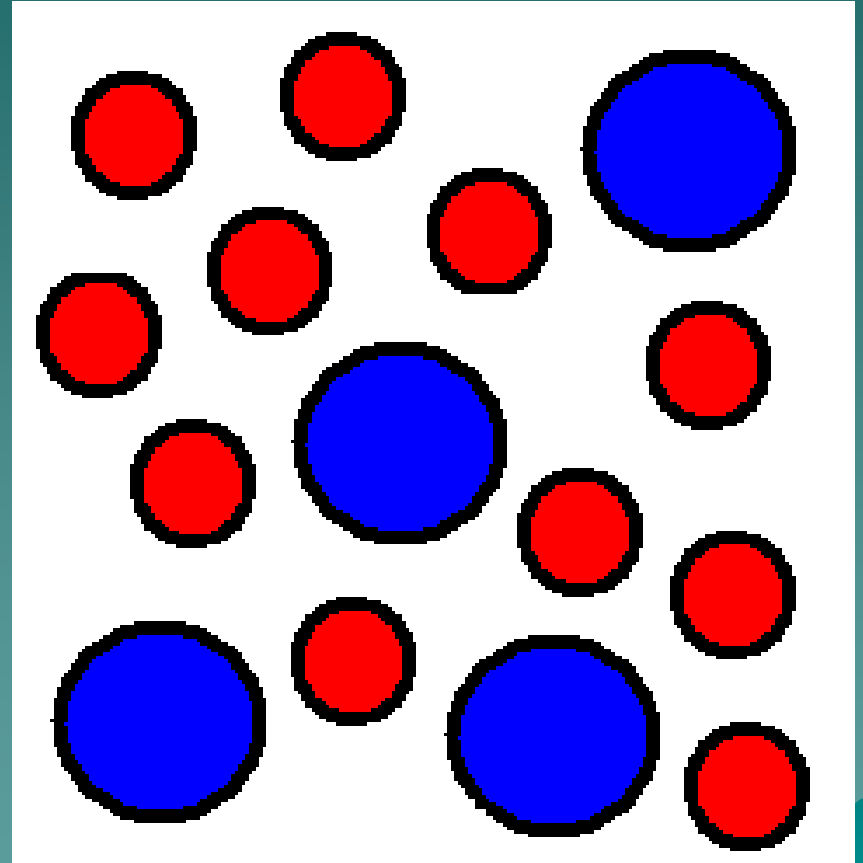
# What is a COMPOUND?



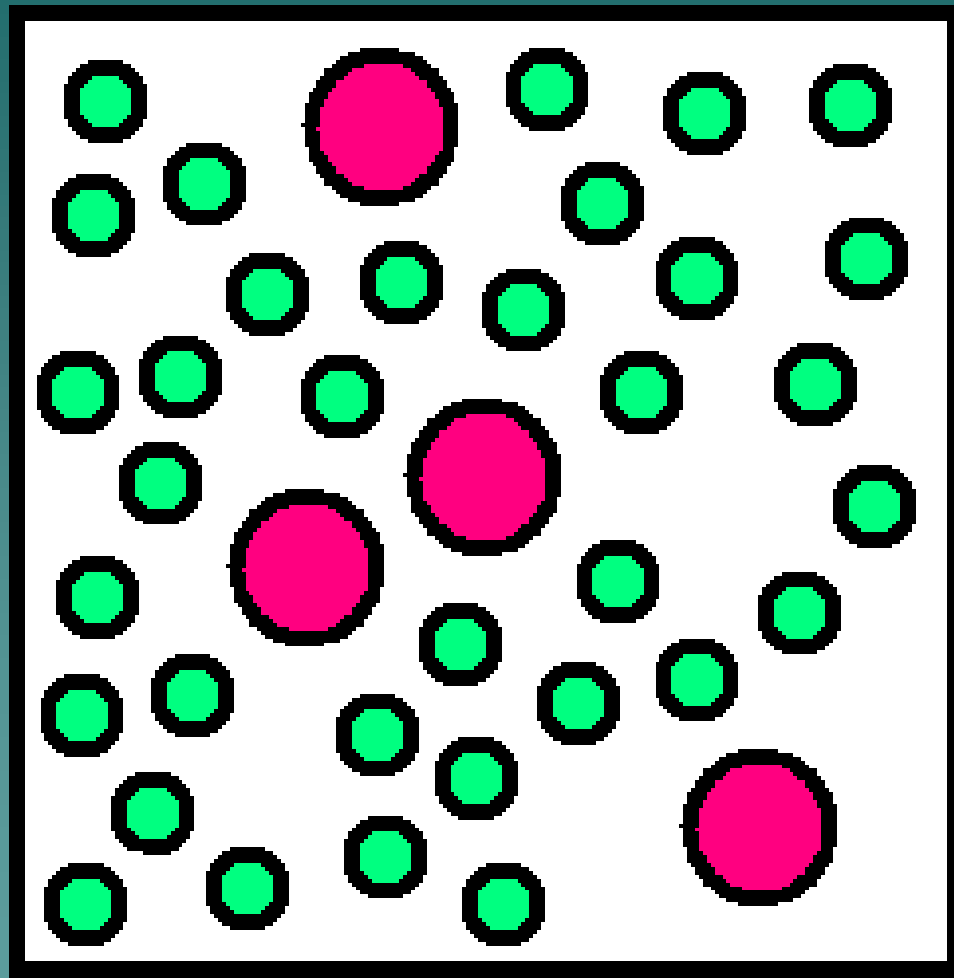
- o A substance in which two or more different elements are **CHEMICALLY** bonded together.

# What is a MIXTURE?

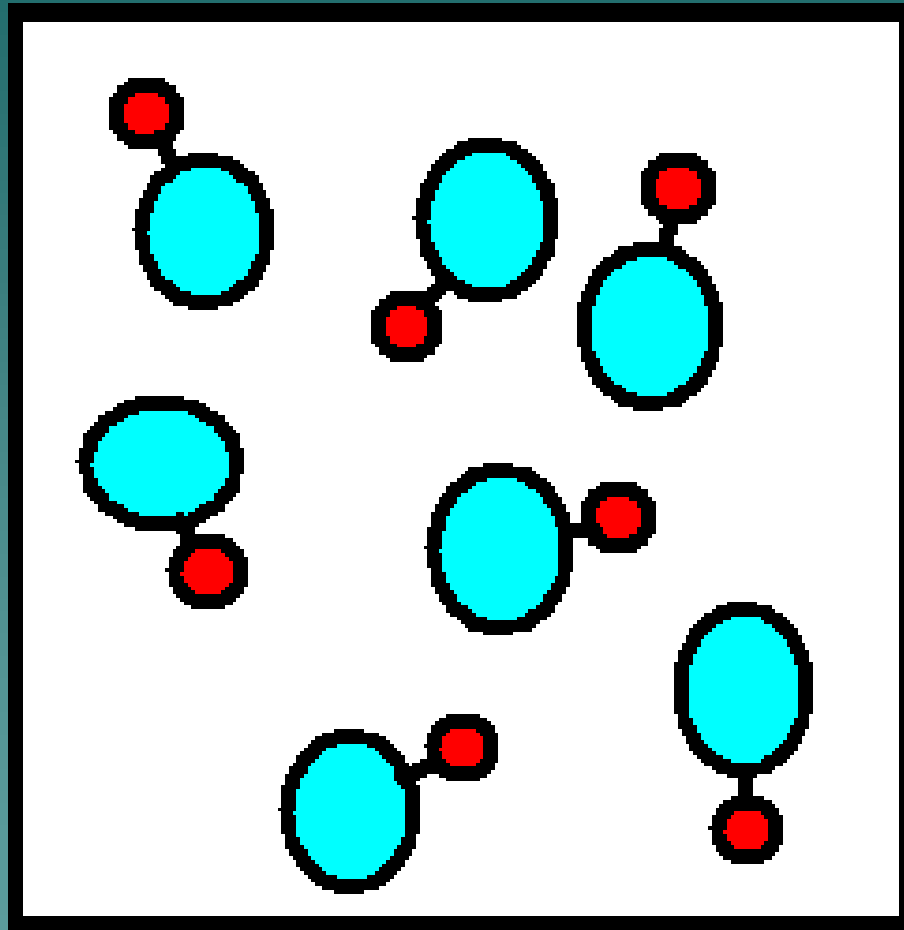
- Two or more substances that are mixed together but are NOT chemically bonded.



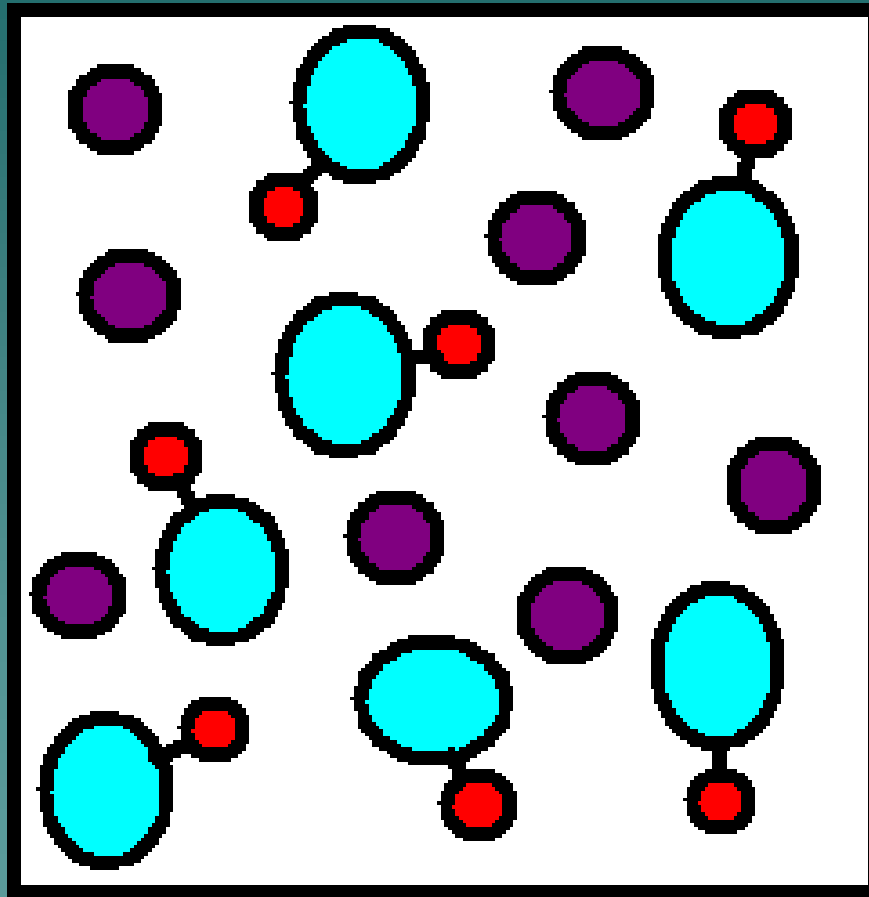
# Element, Compound or Mixture?



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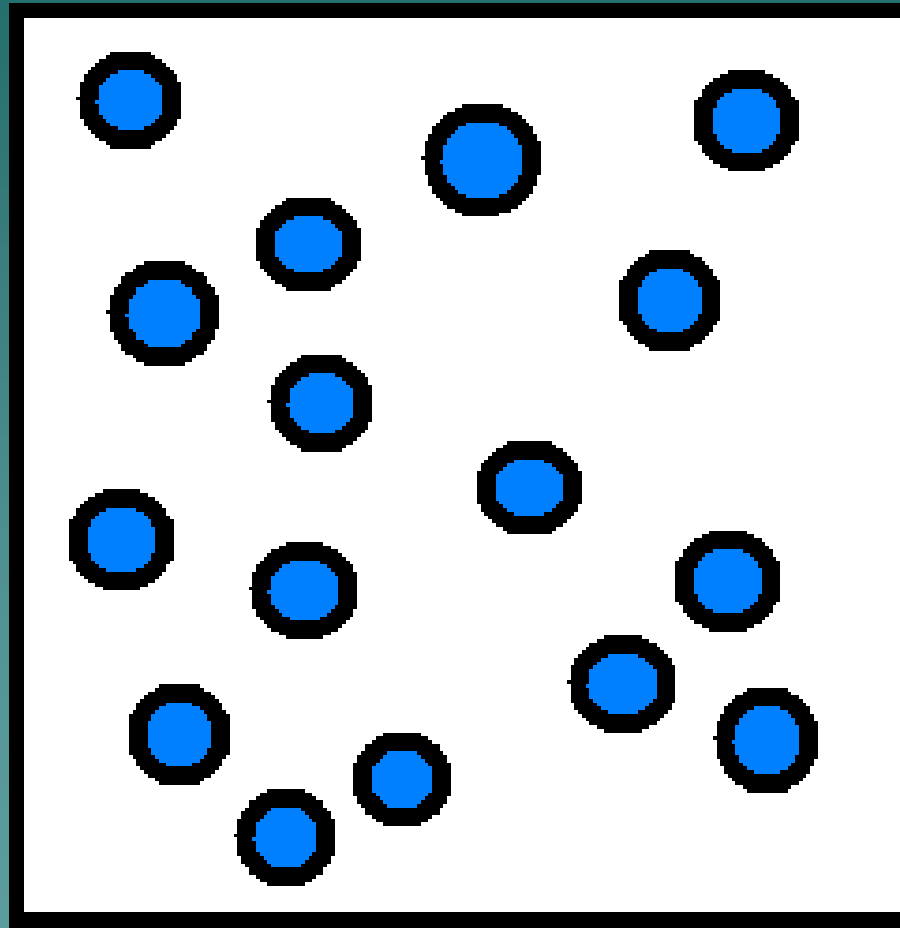


# Element, Compound or Mixture?

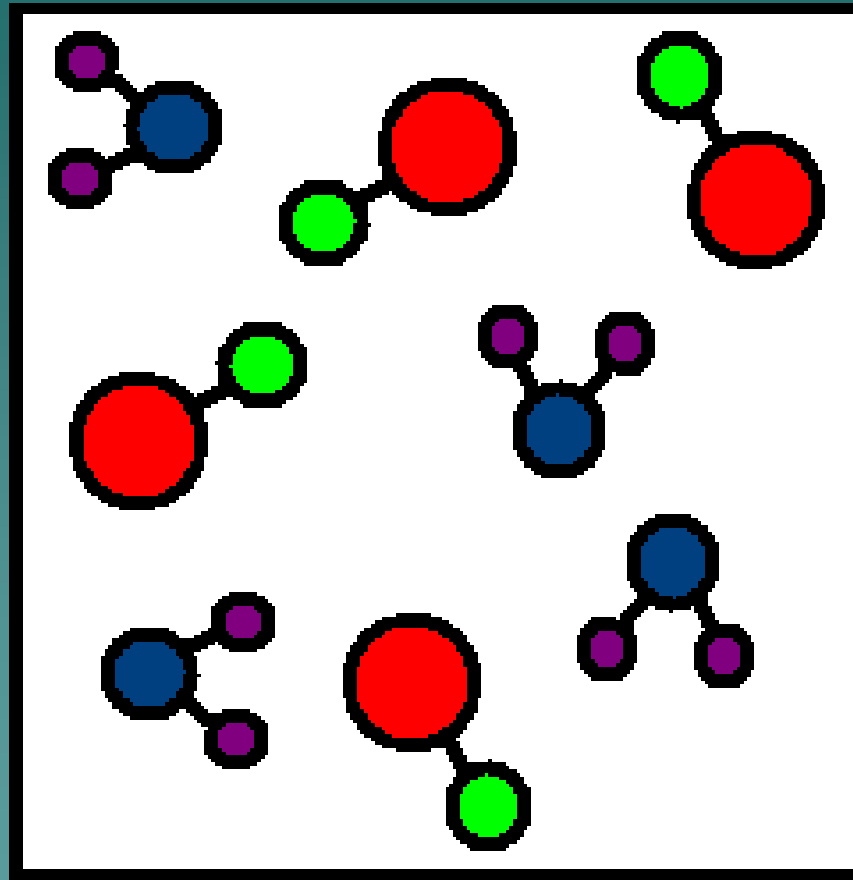




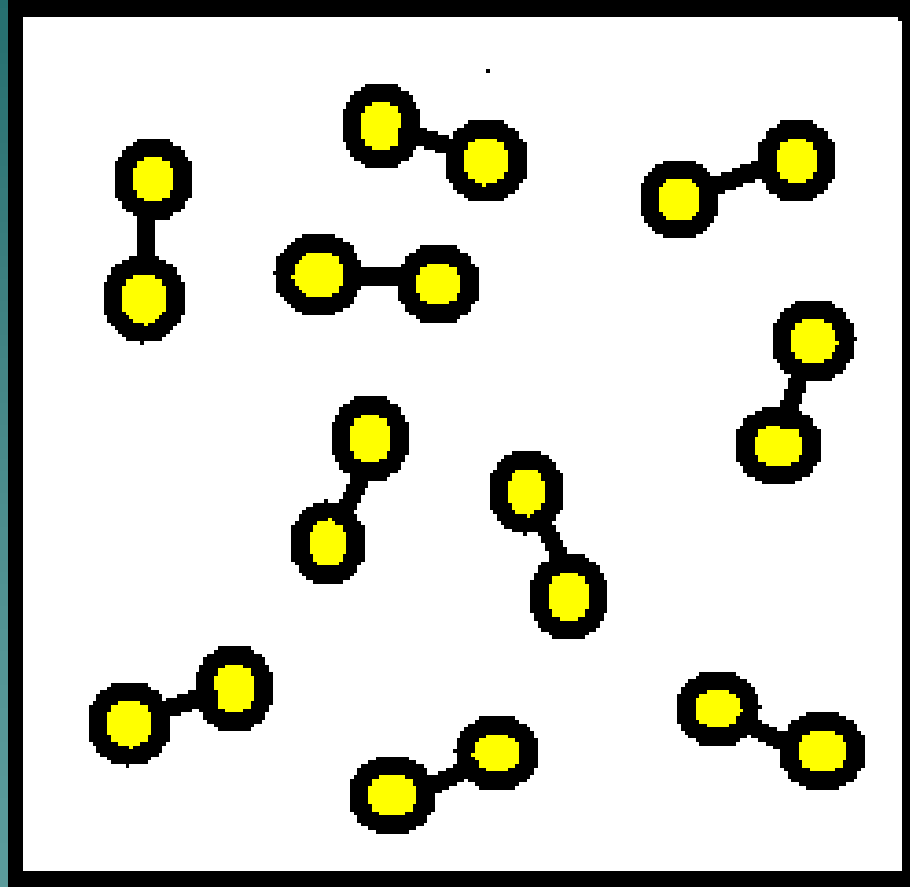
# Element, Compound or Mixture?



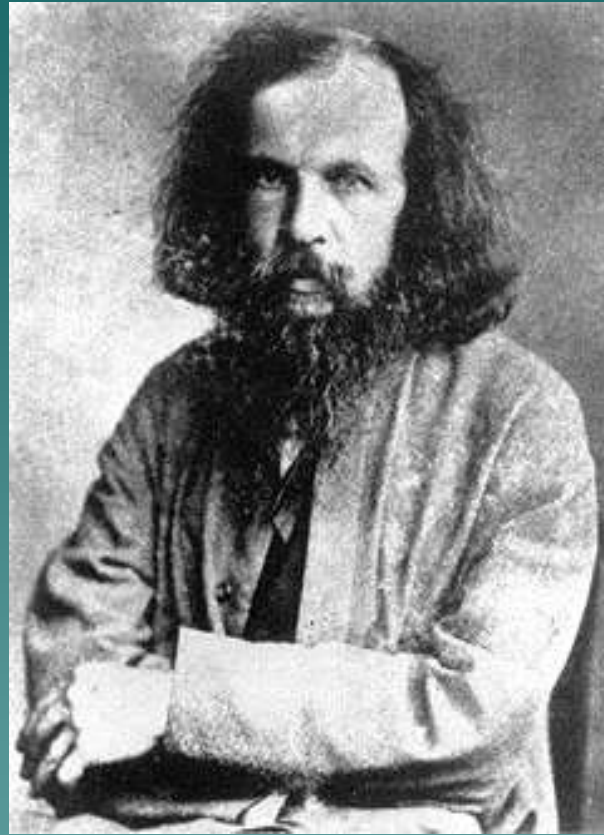
# Element, Compound or Mixture?



# Element, Compound or Mixture?



You are still not as handsome as  
the great Mendeleev!



I am working this beard!  
Man, I look GOOD!