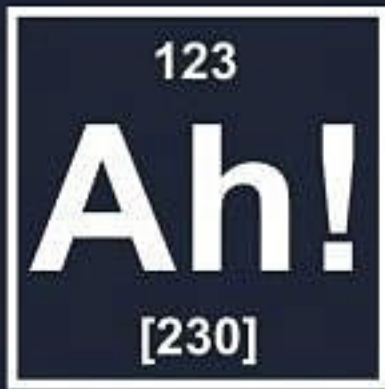


# The Elements



The Element  
of Surprise!

Barium

**Ba**

Carbon

**C**

Oxygen

**O**

Nitrogen

**N**



# Elements

- All matter is a combination of different elements
- There are about 90 naturally occurring elements on Earth

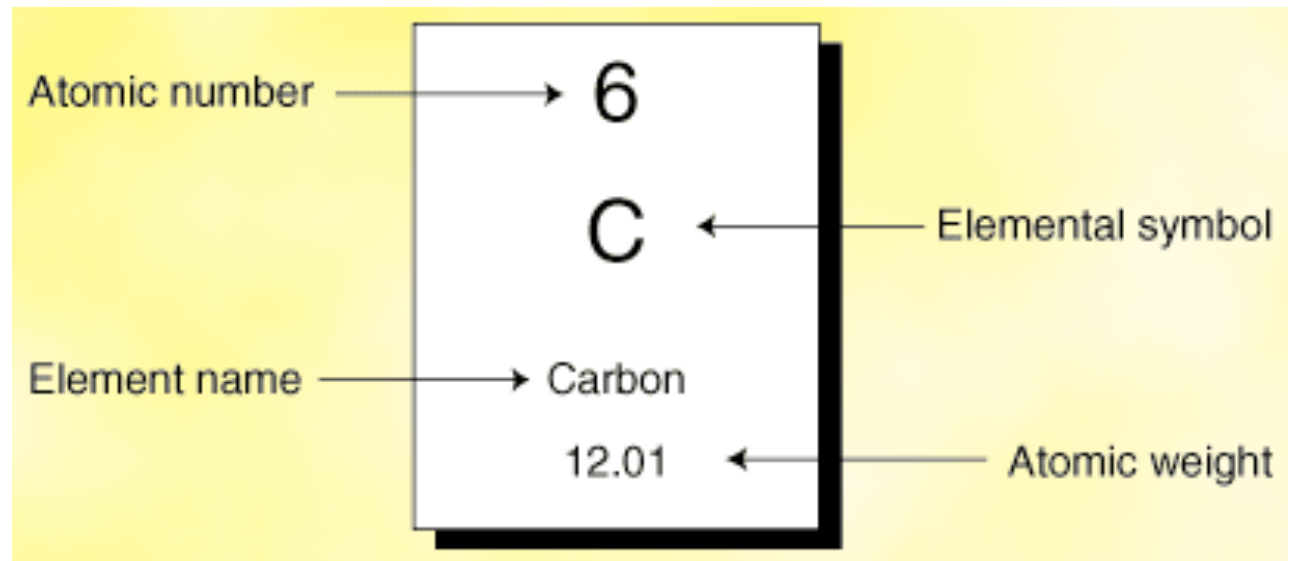
<b>Oxygen (O)</b>	<b>46.6%</b>
<b>Silicon (Si)</b>	<b>27.7%</b>
<b>Iron (Fe)</b>	<b>8.1%</b>
<b>Aluminum (Al)</b>	<b>5%</b>
<b>Calcium (Ca)</b>	<b>3.6%</b>
<b>Sodium (Na)</b>	<b>2.8%</b>
<b>Potassium (K)</b>	<b>2.6%</b>
<b>Magnesium (Mg)</b>	<b>2.1%</b>
<b>Others</b>	<b>1.5%</b>

COMMON ELEMENTS FOUND  
IN THE EARTH'S CRUST



# Elements

- Each element is listed in its own box with information about the element



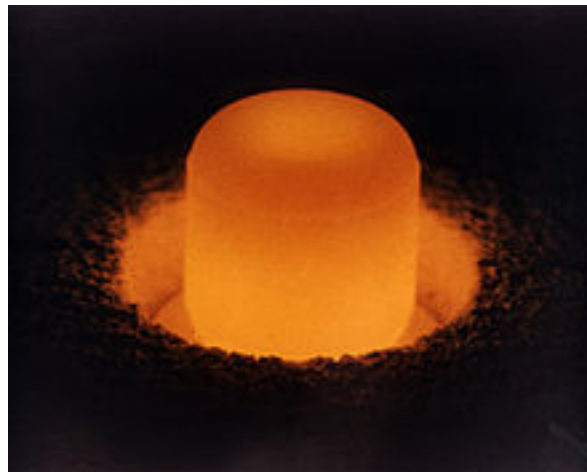
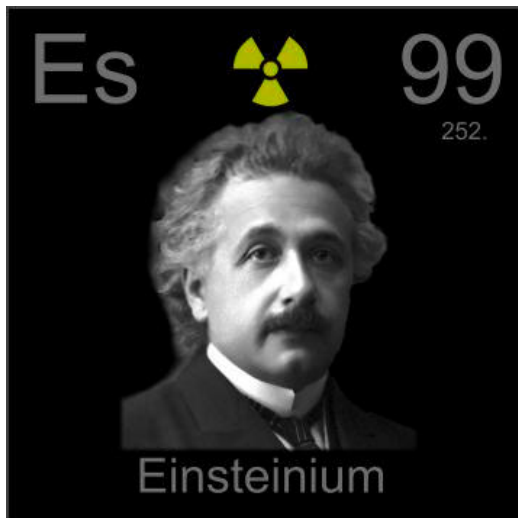
# Element Names

- The name of an element depends on who discovered the element and when. Some elements were named before we knew about elements. For example: gold, silver, sulfur



# Discovered Elements

- Elements that are discovered are sometimes named after people (usually scientists), mythology, or places. Examples: Einsteinium, Plutonium, Californium



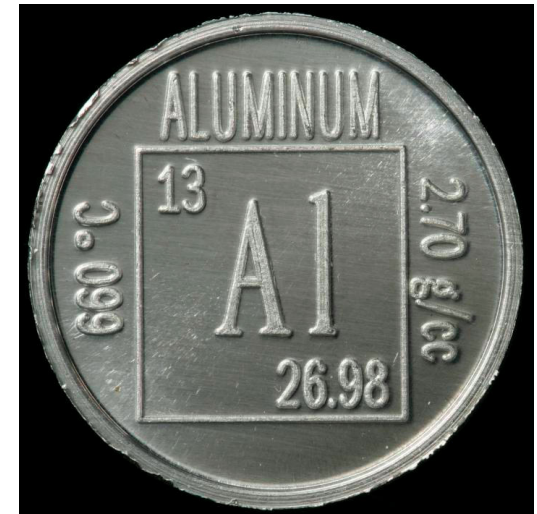
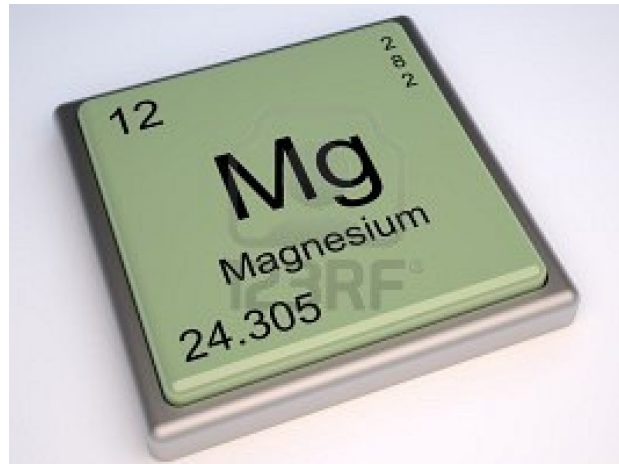
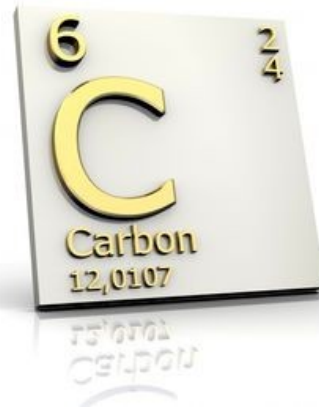
# Symbols for Elements

- The symbols are 1 or 2 letters
- The names are usually the first letter(s) from the element's name
- Some symbols come from the element's Greek or Latin name

					1 H 1.00794	2 He 4.002602	
		5 B 10.811	6 C 12.0107	7 N 14.00674	8 O 15.9994	9 F 18.9984032	10 Ne 20.1797
		13 Al 26.981538	14 Si 28.0855	15 P 30.973761	16 S 32.066	17 Cl 35.4527	18 Ar 39.948
29 Cu 63.546	30 Zn 65.39	31 Ga 69.723	32 Ge 72.61	33 As 74.92160	34 Se 78.96	35 Br 79.904	36 Kr 83.80
47 Ag 107.8682	48 Cd 112.411	49 In 114.818	50 Sn 118.710	51 Sb 121.760	52 Te 127.60	53 I 126.90447	54 Xe 131.29
79 Au 196.96655	80 Hg 200.59	81 Tl 204.3833	82 Pb 207.2	83 Bi 208.98038	84 Po (209)	85 At (210)	86 Rn (222)

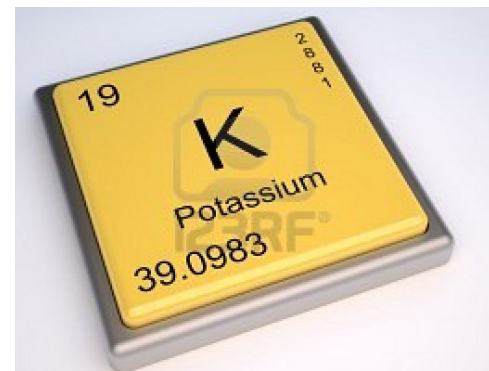
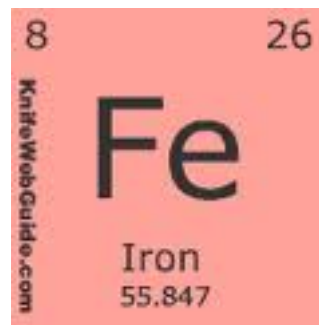
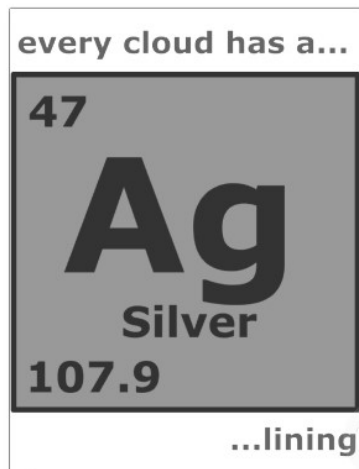
# Examples of Matching Symbols

- C – Carbon
- He – Helium
- Al – Aluminum
- Mg - Magnesium



# Examples of nonmatching Symbols

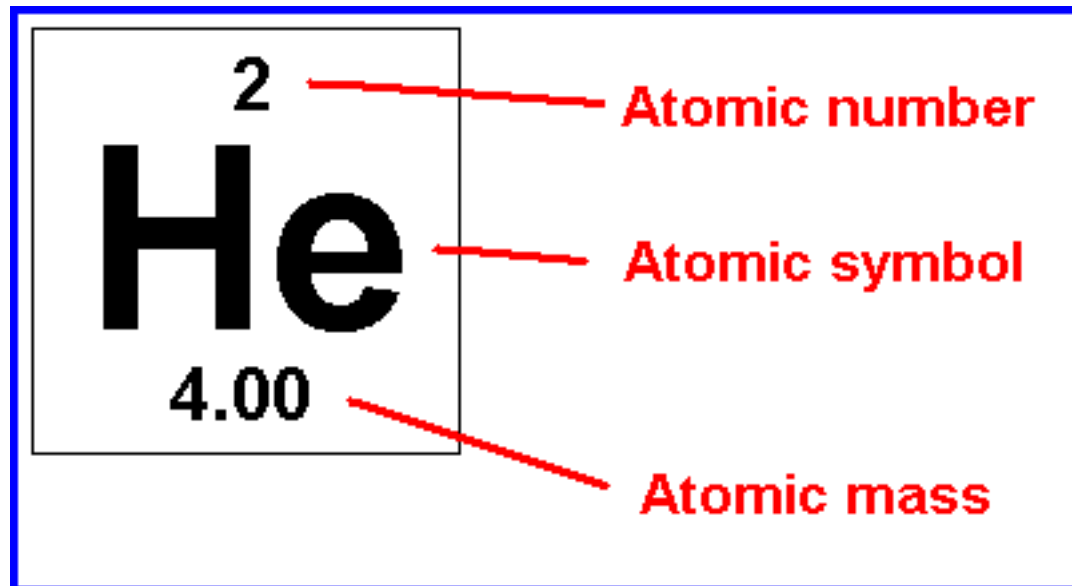
- Mercury – Hg - Latin name hydrargyrum – means quick silver
- Silver – Ag – Latin name argentum
- Iron – Fe – from Latin name ferrum
- Potassium – K – from Latin name kalium





# Atomic Number

- Number of protons in the nucleus of the atom
- The number of protons determines the type of element



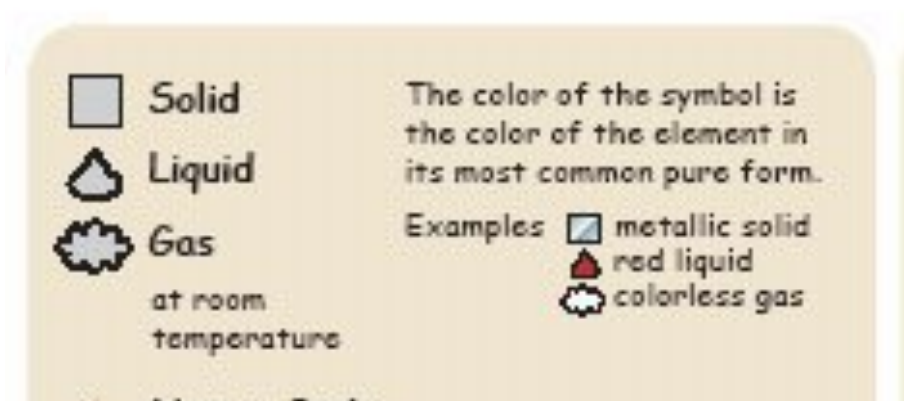
# Atomic Weight or Mass

- How heavy an atom is compared to other elements.
- Is approximately equal to the sum of the protons and neutrons.



# Natural State of Elements

- Sometimes periodic tables will indicate the natural state of an element on Earth by a color or symbol



# Periodic Table of Elements

1A	1 <b>H</b>																				0	2 <b>He</b>	
	3 <b>Li</b>	4 <b>Be</b>										5 <b>B</b>	6 <b>C</b>	7 <b>N</b>	8 <b>O</b>	9 <b>F</b>	10 <b>Ne</b>						
	11 <b>Na</b>	12 <b>Mg</b>	III B	IV B	V B	VI B	VII B	VIII VII			IB	IB	13 <b>Al</b>	14 <b>Si</b>	15 <b>P</b>	16 <b>S</b>	17 <b>Cl</b>	18 <b>Ar</b>					
	19 <b>K</b>	20 <b>Ca</b>	21 <b>Sc</b>	22 <b>Ti</b>	23 <b>V</b>	24 <b>Cr</b>	25 <b>Mn</b>	26 <b>Fe</b>	27 <b>Co</b>	28 <b>Ni</b>	29 <b>Cu</b>	30 <b>Zn</b>	31 <b>Ga</b>	32 <b>Ge</b>	33 <b>As</b>	34 <b>Se</b>	35 <b>Br</b>	36 <b>Kr</b>					
	37 <b>Rb</b>	38 <b>Sr</b>	39 <b>Y</b>	40 <b>Zr</b>	41 <b>Nb</b>	42 <b>Mo</b>	43 <b>Tc</b>	44 <b>Ru</b>	45 <b>Rh</b>	46 <b>Pd</b>	47 <b>Ag</b>	48 <b>Cd</b>	49 <b>In</b>	50 <b>Sn</b>	51 <b>Sb</b>	52 <b>Te</b>	53 <b>I</b>	54 <b>Xe</b>					
	55 <b>Cs</b>	56 <b>Ba</b>	*La	72 <b>Hf</b>	73 <b>Ta</b>	74 <b>W</b>	75 <b>Re</b>	76 <b>Os</b>	77 <b>Ir</b>	78 <b>Pt</b>	79 <b>Au</b>	80 <b>Hg</b>	81 <b>Tl</b>	82 <b>Pb</b>	83 <b>Bi</b>	84 <b>Po</b>	85 <b>At</b>	86 <b>Rn</b>					
	87 <b>Fr</b>	88 <b>Ra</b>	+Ac	104 <b>Rf</b>	105 <b>Ha</b>	106	107	108	109	110													

\* Lanthanide Series

58 <b>Ce</b>	59 <b>Pr</b>	60 <b>Nd</b>	61 <b>Pm</b>	62 <b>Sm</b>	63 <b>Eu</b>	64 <b>Gd</b>	65 <b>Tb</b>	66 <b>Dy</b>	67 <b>Ho</b>	68 <b>Er</b>	69 <b>Tm</b>	70 <b>Yb</b>	71 <b>Lu</b>
-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------

+ Actinide Series

90 <b>Th</b>	91 <b>Pa</b>	92 <b>U</b>	93 <b>Np</b>	94 <b>Pu</b>	95 <b>Am</b>	96 <b>Cm</b>	97 <b>Bk</b>	98 <b>Cf</b>	99 <b>Es</b>	100 <b>Fm</b>	101 <b>Md</b>	102 <b>No</b>	103 <b>Lr</b>
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Legend - click to find out more...

**H** - gas

**Li** - solid

**Br** - liquid

**Tc** - synthetic