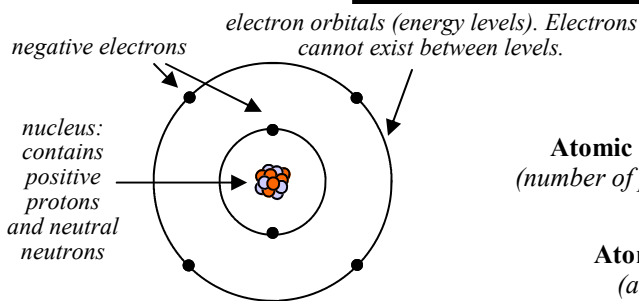


Name: \_\_\_\_\_

Period: \_\_\_\_\_

## Day 16— Atomic Structure and Periodic Table



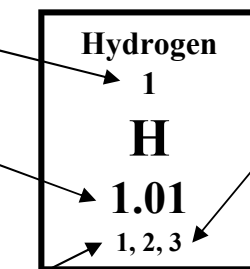
**Valence Electrons:** outer electrons only; involved in chemical bonding. This atom has 4 valence electrons. Elements with the same # of valence electrons react in a similar way (similar reactivity).

### Reading a periodic table tile

**Atomic number**  
(number of protons)

**Atomic mass**  
(average of all the isotopes)

**Mass numbers**  
(Most common isotopes)



*(Isotope—same element, but different # of neutrons)*

### Finding the # of Neutrons

Mass # = protons + neutrons

Neutrons = mass # – protons

For Hydrogen 3:  
3 (mass #) – 1 (atomic #)  
= 2 (neutrons)

**Hydrogen 3 has 1 proton and 2 neutrons.**

Vertical columns are called **groups** and have similar properties. 1A and 17A are the most reactive.

Oxidation #'s tell you how many e's are gained or lost atoms combine.

### Oxidation Numbers

① ← <b>Valence Electrons</b>								→ ⑧	
1A	②							18A	
1 H	2A	3	4	5	6	7	8	2 He	
3 Li	4 Be	5 B	6 C	7 N	8 O	9 F	10 Ne		
11 Na	12 Mg	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar		
19 K	20 Ca	<b>Transition Metals</b> (Oxidation #s vary)		31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
①	②	③	④	-3	-2	-1	0		

*Divides metals and non-metals*

*Helium only has 2 valence electrons*

The elements in group 18A (the Noble Gases) have an oxidation # of 0. This means they don't gain or lose electrons, so they don't react or form compounds. They are **INERT**.

**Metals**  
(Positive Ions)

Positive because they **LOSE** electrons.

**Non-metals**  
(Negative Ions)

Negative because they **GAIN** electrons.

- Protons, Electrons, or Neutrons?
  - \_\_\_ Neutral charge.
  - \_\_\_ Not in the nucleus
  - \_\_\_ Positive
  - \_\_\_ In the nucleus.
  - \_\_\_ Repels a proton.
  - \_\_\_ Lose this and the atom becomes positive.
- How many protons does magnesium (Mg) have?
- Then how many neutrons does magnesium 25 have?
- How many valence electrons does Chlorine (Cl) have?
- What is the oxidation number for Sulfur (S)?

- Metal or non-metal:
  - \_\_\_ Carbon (C)
  - \_\_\_ Calcium (Ca)
  - \_\_\_ Hydrogen (H)
- Which is more reactive: Beryllium (Be) or Lithium (Li)?
- Why do metals tend to be positive?
- Give an example of a noble gas.
- What is the oxidation number of a noble gas (and why?)
- What does "inert" mean?

- What is the atomic number for Bromine (Br)?
- How many valence electrons does helium have?
- What are the vertical columns called?
- What is an isotope?
- How many valence electrons does the atom have below?
- What is its mass number?
- What element is it?

