Name: _____

Period:_____

Chapter 18 Review—Turn in With Test

Atomic Structure—*Know the three subatomic particles, their charges, and where they are in the atom.*
Know these words: element; isotope; nucleus.
Be able to draw a simple example of an atom.
Be able to make an atom on the atom board, given the name and mass number. (Ex: make Neon 20 on the atom board.)
Know that protons attract electrons; know that this is why electrons fill in lower levels first.
Know that like charges repel; know why the protons in the nucleus stay together.

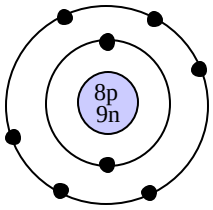
Two electrons will repel or attract.

An electron and a proton will repel or attract.

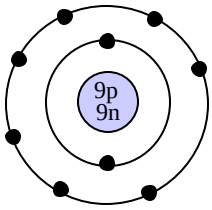
How can a bunch of protons stay together in the nucleus?
Strong Nuclear Force

What are the neutrons in the nucleus for?
For extra Strong Nuclear Force

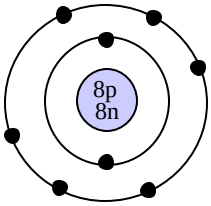
1. Proton—c	a. Particles with no charge that exists in the nucleus of most atoms.	1. Atomic Number— b	a. Total number of protons and neutrons in the nucleus of an atom.
2. Neutron – a	b. Center of the atom, contains most of the atom's mass.	2. Molecule— e	b. Number of protons in an atom; also the way the elements are numbered.
3. Electron—f	c. Positively charged particle in the nucleus of the atom. Determines the element.	3. Compound—d	c. An atom with a different number of neutrons
4. Nucleus—b	d. The smallest part of an element or molecule. Building block of all things.	4. Mass Number a	d. Two or more elements combined.
5. Atom— d	e. Negative particles in the nucleus of the atom.	5. Isotope—c	e. Two or more atoms that are combined (can be same two atoms of same element).
	f. Negatively charged particle that exists in the space around the nucleus.		f. Number of electrons in an atom.



Atom A



Atom B



Atom C

Do any of the three atoms on the left represent the same element?
A&C are both Oxygen

Do any of the three atoms represent isotopes?

A&C are isotopes of Oxygen

Scientists and the Atomic Theory– *Know about these scientists and their contributions to the present theory of the atom:*

1. Dalton—f	a. Did gold foil experiment which proved, in early 20th century, that atoms had a nucleus.
2. Bohr—d	b. Late 1800's scientist found the electron and other smaller particles.
3. Democritus –c	c. Greek philosopher that named the smallest part of matter atoms (atomos).
4. Rutherford –a	d. Mid-1900s scientist that hypothesized that electrons are in distinct orbits.
5. Thompson—b	e. Scientist that said that atoms can be changed chemically.
	f. Worked with gases in 1808 and published theory that atoms were hard spheres.

Who found that atoms are mostly empty space?
Rutherford

Who decided that there had to be a part of matter so small that it had to be indivisible? - *Democritus*

Who decided that atoms do not change when chemicals combine into compounds, they just change places.—
Dalton

Who thought that the atom was like a roll with raisins (electrons) stuck in it? - *Thompson*

Who used light to figure out that atoms have distinct orbits? - *Bohr*

How did the gold foil experiment show that there is a nucleus in the atom?
When alpha particles bounced back from the gold foil that proved there was a solid center—the nucleus.

by C. Stephen Murray, 2003

Name: _____

Period:_____

Chapter 18
Review

Periodic Table – *Be able to find this information from the periodic table: Element Name; Symbol; Atomic Mass; Atomic #.*
Given the mass number and name of an element be able to find the number of protons, neutrons and electrons.
Be able to find an element by its group and period.
Number of valence electrons; number of full electron levels; electron level an atom has electrons in.

Find this information for Nitrogen 15:

Symbol:	N
Mass #:	15
Atomic #:	7
# of Neutrons:	8
# of Protons:	7
# of Electrons:	7
# of full shells:	1

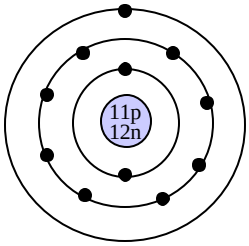
Find this information for Lithium 7:

Symbol:	Li
Mass #:	7
Atomic #:	3
# of Neutrons:	4
# of Protons:	3
# of Electrons:	3
# of full shells:	1

Find this information for Chlorine 35:

Symbol:	Cl
Mass #:	35
Atomic #:	17
# of Neutrons:	18
# of Protons:	17
# of Electrons:	17
# of full shells:	2

sodium 23



How many valence electrons?
one
How many full electron levels?
two
How many electron level does it have? - *three*

How many full electron levels does Sulfur have?
two

How many electron levels does carbon have?
Two (but only one is full)

How many full electron levels does Krypton have?
Four (Krypton completes level four)

Find the valence electrons for the following elements:

Lithium: 1 ____ Helium: 2 _____ Phosphorous:5 _ Argon:8_____

Chlorine: 7 ____ Aluminum:3 ___ Carbon:4_____ Oxygen:6 _____

What group and period is Argon in?

Group: 18A Period: 3 (row 3)

What about Carbon?

Group: 14A Period: 2 (row 2)

Molecular Formulas – *Know these words and their differences: atom; molecule; compound.*
Be able to tell how many atoms of each element are in a molecular formula.
Be able to calculate molecular masses.

What does H_2CO_3 mean?
2 hydrogens
1 carbon
3 oxygens

Atom, molecule or compound?

Fe — atom _____

O_2 — molecule _____

MgO — compound_____

Find the molecular mass of MgF_2.

Mg	24.305 a.m.u.
F	18.998 a.m.u.
+F	18.998 a.m.u.
MgF	62.305 a.m.u.

Find the molecular mass of NaOH.

Na	22.990 a.m.u.
O	15.999 a.m.u.
H	1.008 a.m.u.
NaOH	39.997 a.m.u.

Light – *Know that light comes from electrons changing from higher to lower levels.*
Know that different elements give off different colors of light.

What did we do in class to show that different elements have different energy levels?

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