

**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.*

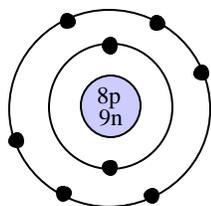
Two electrons will repel or attract.

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

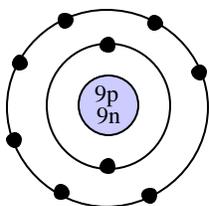
An electron and a proton will repel or attract.

What are the neutrons in the nucleus for?

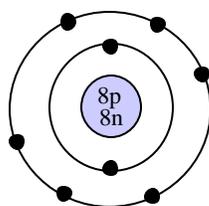
1. Proton—	a. Particles with no charge that exists in the nucleus of most atoms.	1. Atomic Number—	a. Total number of protons and neutrons in the nucleus of an atom.
2. Neutron —	b. Center of the atom, contains most of the atom's mass.	2. Molecule—	b. Number of protons in an atom; also the way the elements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

Do any of the three atoms represent isotopes?

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

1. Dalton	a. Did gold foil experiment which proved, in early 20th century, that atoms had a nucleus.
2. Bohr	b. Late 1800's scientist found the electron and other smaller particles.
3. Democritus	c. Greek philosopher that named the smallest part of matter atoms (atomos).
4. Rutherford	d. Mid-1900s scientist that hypothesized that electrons are in distinct orbits.
5. Thompson	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?

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

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

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

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

How did the gold foil experiment show that there is a nucleus in the atom?

**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:

Find this information for Lithium 7:

Find this information for Chlorine 35:

Symbol:	Symbol:	Symbol:
Mass #:	Mass #:	Mass #:
Atomic #:	Atomic #:	Atomic #:
# of Neutrons:	# of Neutrons:	# of Neutrons:
# of Protons:	# of Protons:	# of Protons:
# of Electrons:	# of Electrons:	# of Electrons:
# of full shells:	# of full shells:	# of full shells:

<p>sodium 23</p> <p>How many valence electrons?</p> <p>How many full electron levels?</p> <p>How many electron level does it have?</p>	How many full electron levels does Sulfur have?
	How many electron levels does carbon have?
	How many full electron levels does Krypton have?
Find the valence electrons for the following elements:	
Lithium: _____ Helium: _____ Phosphorous: __ Argon: _____ Chlorine: _____ Aluminum: _____ Carbon: _____ Oxygen: _____	What group and period is Argon in? Group: _____ Period: _____ What about Carbon? Group: _____ Period: _____

**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?	Atom, molecule or compound?	Find the molecular mass of $MgF_2$ .	Find the molecular mass of NaOH.
	Fe — _____		
	$O_2$ — _____		
	MgO — _____		

**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?