

Nuclear and the Atom Study Guide

- How is the nucleus held together? Why does it take so much energy to keep a nucleus together?
- If a nucleus has too many protons or neutrons, what happens to the nucleus?
- Where does nuclear energy come from? What equation explains nuclear energy? What is mass defect?
- What are the three types of nuclear reactions? How can you tell them apart?
- Know the characteristics and symbols of all three nuclear particles.
- What is half-life? Complete p. 837 #80-82.
- Which nuclear reaction is prevalent on the sun? In a nuclear reactor?
- Complete p. 838 #94
- Know how to balance nuclear equations. Complete p. 837 #69b, 71, 72

Electron Study Guide

- Know the relationship between energy, frequency and wavelength.
- Light behaves as both a _____ and a _____.
- What is the photoelectric effect and what did it prove about light?
- How can we tell what elements make up a distant star?
- Bohr's model stated that electrons exist on _____. How did he conclude this?
- How does an atom emit light?
- The quantum model states that you cannot know both the _____ AND _____ of an electron.
- Define atomic orbital and draw the s suborbital and the three p suborbitals.
- What are the 4 types of orbitals and how many electrons can each shape hold?
- What is the number in front of the orbital also known as?
- Write the electron configurations for the following:
 - Li
 - K⁺
 - Ni
- Write the **noble gas** configuration for the following:
 - Nb
 - Bi²⁻
 - Fr
- Draw the orbital diagrams for the following elements:
 - C
 - S
 - Mn
- What is the Aufbau Principle, Pauli Exclusion Principle and Hund's Rule?
- Are the following ground state or excited state configurations?
 - $1s^2 2s^2 2p^5 3s^1$
 - $1s^2 2s^2 2p^6$
 - $1s^2 2s^1 2p^6$

Periodic Table Review

- How is the periodic table arranged? By increasing _____.
- What is the group number for alkali metals, alkaline earth metals, halogens and noble gases? Also, how many valence electrons does each group have?
- Label metals, semi-metals, and non-metals on the periodic table on the right.
- What are some properties of metals?
- What are some properties of nonmetals?
- Circle the correct characteristic that describes the periodic group

a.	alkali metals:	reactive or unreactive?
b.	alkali earth metals:	softer or harder than alkali metals?
c.	halogens:	high or low boiling points?
d.	noble gases:	reactive or unreactive?
- From left to right, what happens to the following (increase or decrease)?

a.	Ionization Energy	_____
b.	Electronegativity	_____
c.	Atomic size	_____
d.	Ionic size	_____
- From top to bottom, what happens to the following (increase or decrease)?

a.	Ionization Energy	_____
b.	Electronegativity	_____
c.	Atomic size	_____
d.	Ionic size	_____

Periodic Table of the Elements
with Atomic Numbers and Mass Numbers of Stable Isotopes

Element Symbol Z Mass Numbers of Stable Isotopes
 Element Name A Atomic Number
 Key

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