Name_____ **Practice for unit 3 test**

2 1. According to the electron-cloud model of the atom, an orbital is a

1) circular path traveled by an electron around the nucleus
2) region of the most probable electron location
3) region of the most probable proton location
4) spiral path traveled by an electron toward the nucleus

defined

analogy flower & bee

3 2. Which electron configuration represents an excited state for a potassium atom?

1) 2-8-8-1 2) 2-8-8-2
3) 2-8-7-2 4) 2-8-7-1

2-8-8-1 = ground state
needs same # of electrons

Base your answers to questions 3 through 4 on the information below and on your knowledge of chemistry.

Naturally Occurring Isotopes of Copper

Isotope Notation	Percent Natural Abundance (%)	Atomic Mass (atomic mass units, u)
Cu-63	69.17	62.930
Cu-65	30.83	64.928

3. Show a correct numerical setup for calculating the atomic mass of copper.

$$\frac{(69.17)(62.930) + (30.83)(64.928)}{100}$$

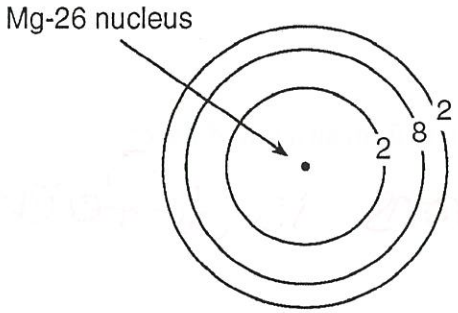
OR $(.6917)(62.930)+(.3083)(64.92$

4. The atomic mass of Cu-63 is expressed to what number of significant figures?

62.930
1 2 3 4 5
point present = pacific

5

Base your answers to questions 10 and 11 on the diagram below, which represents an atom of magnesium-26 in the ground state.



10. Write an appropriate number of electrons in *each* shell to represent a Mg-26 atom in an excited state. Your answer may include additional shells.

Move an e⁻ out

2-8-1-1

or

2-7-3

or 1-8-3 (can't fit 9 in the 2nd shell)

outer # = valence e⁻

11. What is the total number of valence electrons in an atom of Mg-26 in the ground state? (2-8-2)

2

=neutral

___ 5. What is the total number of electrons in an atom of Cu-65? 29 protons

29 electrons

6. State, in terms of subatomic particles, how an atom of Cu-63 differs from an atom of Cu-65.

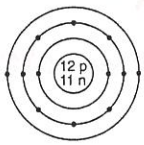
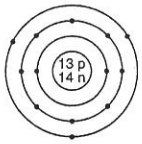
The number of neutrons is different.

DON'T FORGET ME!

7. Draw a Lewis electron-dot diagram of a selenium atom in the ground state.

(note as long as you have 6 dots it's correct)

Atomic Diagrams of Magnesium and Aluminum

Key	Element	Lewis Electron-Dot Diagram	Electron-Shell Diagram
• = electron	magnesium	Mg:	
	aluminum	Al:	

8. Determine the mass number of the magnesium atom represented by the electron-shell diagram.

P+N = 12+11

23

___ 9. Naturally occurring boron is composed of two isotopes. The percent abundance and the mass of each isotope are listed below.

- 19.9% of the boron atoms have a mass of 10.013 atomic mass units.
- 80.1% of the boron atoms have a mass of 11.009 atomic mass units.

Calculate the atomic mass of boron. Your response must include *both* a correct numerical setup and the calculated result.

$\frac{(10.013)(19.9) + (11.009)(80.1)}{100}$

10.810796 atomic mass units