

Name _____ Period _____

Please write down the answers on a separate piece of paper.

Practice Problems: Due Friday. Be ready to ask questions before we take the test.

1. The total number of orbitals that can exist in the third main energy level is?
2. Dalton's atomic theory helped to explain what law?
3. What happens when an electron goes from its ground state to a higher energy level?
4. Most of the volume of an atom is where?
5. A single orbital in the 3d level can hold how many electrons?

6. **speed of light = wavelength x frequency $c = \lambda f$**

$$\text{speed of light} = c = 3.00 \times 10^8 \text{ m/s}$$

$$E = hf$$

$$h = \text{Planck's constant} = 6.63 \times 10^{-34} \text{ J}\cdot\text{s}$$

$$1 \text{ nm} = 10^{-9} \text{ m}$$

$$10^9 \text{ nm} = 1 \text{ m}$$

$$10^2 \text{ cm} = 100 \text{ cm} = 1 \text{ m}$$

Solve the following problems using the equations above. First write the equation you are using.

Remember any conversions you need to complete before you compute.

- a. What is the frequency in hertz of red light having a wavelength of 710 nm?
 - b. Ozone protects the earth's inhabitants from the harmful effects of ultraviolet light arriving from the sun. This shielding is a maximum for UV light having a wavelength of 295 nm. What is the frequency in hertz of this particular wavelength of UV light?
 - c. Radar signals are also part of the electromagnetic spectrum in the microwave region. A typical radar signal has a wavelength of 3.19 cm. What is the frequency in hertz?
7. Principal quantum number 2 the total number electrons are?
 8. True or False: atomic mass on the periodic table is the average atomic mass of all the natural occurring isotopes of that element on earth.
 9. The mass of a neutron is relatively the _____ as that of a(n) _____.
 10. The majority of the mass of an atom is found in the _____.
 11. What are isotopes?
 12. Define ion in your own words.
 13. Find the number of neutrons for the following elements: Mg, Zr, P.
 14. The number of orbitals for d are ?
 15. Visible light, infrared, ultra-violet all have what in COMMON?
 16. Ag-108 has how many neutrons?
 17. The distance between two peaks of a wave is called what? (frequency, wavelength, speed, or energy)
 18. Explain why an atom is electrically neutral and an ion is not.
 19. What is the electron configuration for the following: Ni, N, Xe?
 20. Name 3 types of electromagnetic radiation and put them in order from highest energy to lowest.
 21. Draw a Bohr model of calcium.
 22. Fill in the following chart:

Symbol	Atomic #	Protons	Neutrons	Mass number	Average atomic mass
					15.99
				12	
Na					69.723
		12			