

Unit 3A Quiz #1: Atomic Structure

Name: _____

Block: _____ Date: _____

I. Matching: Each scientist may be used once or more than once.

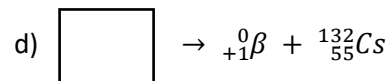
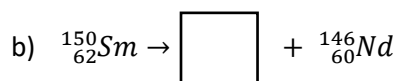
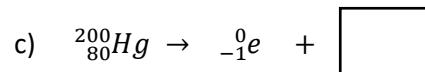
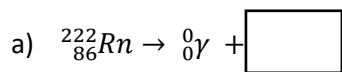
- | | | |
|---------------------|----------------------|----------------|
| A. Robert Millikan | D. Werner Heisenburg | G. Democritus |
| B. Louis de Broglie | E. Ernest Rutherford | H. John Dalton |
| C. James Chadwick | F. J. J. Thompson | I. Neil Bohr |

- ____ 1. Credited with discovering the neutron.
- ____ 2. Proposed the Plum Pudding Model
- ____ 3. Believed all matter was made of atoms.
- ____ 4. Proposed the Planetary Model
- ____ 5. Claimed that elements combine to form compounds.
- ____ 6. Proposed that electrons orbit the nucleus in fixed energy orbitals.
- ____ 7. Proved that cathode rays were negatively charged particles
- ____ 8. Proposed that electron orbitals have different shapes
- ____ 9. Experiment proved that positive charged particles were packed in the nucleus
- ____ 10. Developed First Atomic Theory
- ____ 11. Calculated the charge to mass ratio of an electron
- ____ 12. Position and the velocity of an object cannot both be measured exactly
- ____ 13. Performed the Gold Foil Experiment

II. Short Answer and Fill-in-the-Blank.

- 1. How many neutrons are present in an isotope of ^{50}V ?
- 2. What is the isotopic notation for an atom containing 12 protons, 11 neutrons, and 10 electrons?
- 3. The atomic number of an atom is equal to the number of _____.
- 4. Which subatomic particle is located outside the nucleus?
- 5. Write the complete isotopic notation for a strontium atom with 126 subatomic particles.
- 6. Explain what isotopes are and draw examples in the space below.

7. Balance the following nuclear equations:



8. In order for an atom to be neutral, _____.

9. An isotope with a mass number of 207 and atomic number of 82 would belong to which element?

III. Calculations - **Must show work to earn credit.**

1. Lead has four stable isotopes as shown below. Calculate the average atomic mass to three decimal places.

Isotope	Percent Abundance
${}^{204}\text{Pb}$	1.4
${}^{206}\text{Pb}$	24.1
${}^{207}\text{Pb}$	22.1
${}^{208}\text{Pb}$	52.4

2. Thallium exists as two stable isotopes and has an atomic mass of 204.383 amu. Thallium-203 makes up 29.524% of all naturally occurring thallium atoms. Calculate the mass of the other isotope to three sig figs? Show work for your calculation.

3. How many half-lives will it take for 15 g of radioactive Bismuth-210 to decay to *less than 1 grams*?

4. Radon-201 undergoes alpha decay every 7.0 seconds. If a 25.0 gram sample of Radon-201 was tested after 105 seconds, how many half-lives have passed?

5. Actinium-225 decays through alpha decay with a half-life of 10 days. If a 30.0 gram sample experiences three half-life cycles, how many grams are left?