

Unit Four Review

- Compare and contrast protons, neutrons, and electrons.
- Describe the forces that hold the particles of atoms together.
- Define atomic number and mass number.
- Describe ions and isotopes
- Identify the particles called quarks.
- State Democritus's ideas about the atom.
- Outline Dalton's atomic theory.
- Explain how Thomson discovered electrons.
- Describe how Rutherford found the nucleus.
- Define energy levels.
- Describe the electron cloud and orbitals

Here are some types of questions.

1. Describe the nucleus of an atom.
2. Outline the forces that hold particles together in an atom.
3. What does the atomic number of an atom represent?
4. Define isotope. Give an example.
5. What are quarks?
6. If an atom gains electrons, it becomes an ion. Is the ion positively or negatively charged? Explain your answer.
7. What is the atomic mass (in atomic mass units) of the atom represented by the model below?
8. Make a table comparing and contrasting protons, neutrons, and electrons. Include their location, mass, and electric charge.
9. Explain why atoms are neutral in electric charge
10. State Democritus's ideas about the atom.
11. What evidence did Dalton use to argue for the existence of atoms?
12. State Dalton's atomic theory.
13. Describe how Thomson discovered electrons.
14. Create sketches to compare and contrast Thomson's and Rutherford's models of the atom.

15. Based on Rutherford's work, use evidence and reasoning to argue for the existence of the nucleus
16. What are energy levels?
17. Which energy level has the smallest amount of energy?
18. Define orbitals.
19. How many electrons can be found in an orbital?
20. A change in energy caused an electron in an atom to jump from energy level 2 to energy level 3. Did the atom gain or lose energy? Explain.
21. Create a sketch to model the concept of the electron cloud.
22. Explain how orbitals are related to energy levels.
23. An atom having lost two electrons _____
24. An atom having lost six electrons _____
25. An atom having gained one electron _____
26. An atom having gained three electrons _____
27. An atom having lost five electrons _____
28. An atom having gained two electrons _____
29. An atom having lost one electron _____
30. An atom having gained four electrons _____

Element/Ion	Atomic Number	Number of Protons	Number of Neutrons	Number of Electrons	Mass Number
${}^1_1\text{H}$					
${}^1_1\text{H}^+$					
${}^{35}_{17}\text{Cl}^{\bullet}$					
${}^{24}_{12}\text{Mg}^{2+}$					
${}^{108}_{47}\text{Ag}^+$					
${}^{32}_{16}\text{S}^{2-}$					
		30		28	66
	76		114		