

Atomic Structure & Chemical Quantities

Unit Review

Learning Targets	Textbook Section:
3.1) Explain how Democritus and John Dalton described atoms.	4.1
3.2) Identify three types of subatomic particles.	4.2
3.3) Describe the structure of atoms according to the Rutherford model.	4.2
3.4) Explain what makes one element different from another.	4.3
3.5) Explain how isotopes of an element differ.	4.3
3.6) Calculate the atomic mass of an element.	4.3
3.7) Convert among the count, and mass of an element.	10.1
3.8) Explain how chemists count the number of atoms, molecules, or formula units of a substance.	10.1
3.9) Determine the molar mass of an element.	10.1
3.10) Describe how to convert the mass of a substance to the number of moles of a substance, and moles to mass.	10.2

Suggested Reading:

Chapter 4: Pages 100-119

Chapter 10: Pages 304-323

End of Chapter Practice:

Chapter 4: (you should have the odds already completed)

35, 37, 38, 39, 40, 41, 42, 43, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 56, 57, 58, 61, 64, 66, 67, 69, 72

Chapter 10: (you should have the evens already completed)

50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65

Mastering Chemistry:

The mastering chemistry review assignment is due Wednesday morning by 7:00am

311/312 Chemistry

1. Who was the first person to suggest the existence of atoms?
2. What were the four parts of Dalton's Atomic Theory?
3. What subatomic particle is J.J. Thomson associated with?
 - a. How did he know that it had a charge?
4. What is the name we give to J.J. Thomson's model of the atom?
 - a. Sketch a version of this model (label the different parts).
5. What was Ernest Rutherford's big experiment?
 - a. What was so surprising about it?
 - b. What subatomic particle is he credited with discovering?

6. How did Niels Bohr describe the atom?

a. Sketch his model of the atom (label the different parts)

7. Erwin Schrodinger saw things differently than Niels. How was his idea about the atom different from Niels Bohr's idea of the atom?

8. James Chadwick confirmed the existence of what subatomic particle?

9. Fill in the table below with the correct information about the three subatomic particles in an atom:

Name	Mass	Charge	Location within an Atom

10. Fill in the table below:

Element	Symbol	Atomic Number	Atomic Mass	# Neutrons	# Protons	# Electrons
		1	2			
		4				
						6
			16			
Chlorine						
	Zn					
			56			
		19				
	Mg	12				
Uranium						
					20	

11. Sulfur is composed mainly of 2 isotopes: S-32 and S-34.

- What about these two isotopes are the same?
- What about these two isotopes is different?

12. Write the following elements in shorthand notation.

- Carbon
- Helium
- Lithium
- Iron

13. A sample of nitrogen atoms is composed of 43.7% N-14 (14.003amu) and 57.3% N-15 (15.000amu). What is the average atomic mass of this sample?

14. Find the atomic mass of a sample of chlorine atoms. Assume that 80.01% of the sample is Cl-35 and 19.99% of the sample is Cl-37.

15. Carbon has two stable isotopes: carbon-12, with a natural abundance of 95.00%, and carbon-13, with a natural abundance of 5.00%. The mass of C-12 is 12.000 amu and the mass of C-13 is 13.000 amu. What is the average atomic mass of this sample.

16. What is the molar mass of As?

17. How many moles are in 36.4 g of Kr?

18. What is the mass of 5.56 moles Be?

19. How many atoms are in 23.33 g of nickel?

20. How many atoms are in 4.6 moles of Se?

21. What is the mass of 27 atoms of Ge?

22. How many moles are in 95.67 g of Ar?

23. What is the mass of 2.00 moles of cobalt?

24. What is the molar mass of Pd?