

### Atomic Structure Summary:

1. What is important about the atomic number?

2. How do you figure out the number of...

a. Protons in an atom?

b. Electrons in an atom?

c. Neutrons in an atom?

3. What are **isotopes**?

Isotopes are different forms of the \_\_\_\_\_ that have a \_\_\_\_\_

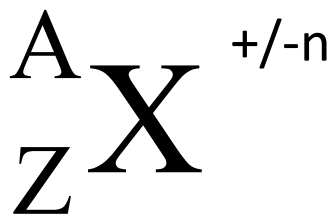
Isotopes of the same element have the \_\_\_\_\_ but \_\_\_\_\_

4. What are **ions**?

Ions are atoms that have a \_\_\_\_\_

In an ion, the \_\_\_\_\_

5. What is standard nuclear notation?



6. What is the *one thing* that determines the **identity** of an atom?

7. Go to [https://phet.colorado.edu/sims/html/build-an-atom/latest/build-an-atom\\_en.html](https://phet.colorado.edu/sims/html/build-an-atom/latest/build-an-atom_en.html) and click on "game". Complete all 4 games with 100% accuracy (you get two tries per problem) and get them stamped off.

Game 1:

Game 2:

Game 3:

Game 4:

8. Complete the following table: assume these are all **neutral atoms**

Element	Nuclear Notation	Mass Number	Atomic Number	# Protons	# Neutrons	# Electrons
Sodium – 23	${}^{23}_{11}\text{Na}$			11	12	11
Aluminum - 27						
				28	30	
	${}^{184}_{74}\text{W}$					
					51	40

9. Indicate the number of protons, neutrons and electrons for the following **ions**:

Element	Nuclear Notation	Mass Number	Atomic Number	# Protons	# Neutrons	# Electrons
Sodium (+1)	${}^{23}_{11}\text{Na}^{+1}$	23	11	11	12	10
Sulfur (-2)		32				
	${}^{80}_{35}\text{Br}^{-1}$					
		25	12			10