**Worksheet #3**

**Name: Period: Seat#:**

**Complete the following chart and answer the questions below:**

1. The 3 particles of the atom are: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Their respective charges are: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. The number of protons in one atom of an element determines the atom’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and the number of electrons determines the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an element.
4. The atomic number tells you the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in one atom of an element. It also tells you the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a neutral atom of that element. The atomic number gives the “identity” of an element as well as its location on the Periodic Table. No two different elements will have the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ number.
5. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an element is the average mass of an element’s naturally occurring atom, or isotopes, taking into account the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of each isotope.
6. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an element is the total number of protons and neutrons in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the atom.
7. The mass number is used to calculate the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in one atom of an element. In order to calculate the number of neutrons you must subtract the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Give the symbol and number of protons in one atom of:**

|  |  |  |  |
| --- | --- | --- | --- |
| **8)** Lithium | **9)** Iron | **10)** Oxygen | **11)** Kyrpton |
| **12)** Bromine | **13)** Copper | **14)** Mercury | **15)** Helium |

**Give the symbol and number of electrons in one atom of:**

|  |  |  |
| --- | --- | --- |
| **16)** Uranium | **17)** Boron | **18)** Antimony |
| **19)** Chlorine | **20)** Iodine | **21)** Xenon |

**Give the symbol and number of neutrons in one atom of:**

|  |  |  |  |
| --- | --- | --- | --- |
| **22)** Barium | **23)** Bismuth | **24)** Carbon | **25)** Mercury |
| **26)** Magnesium | **27)** Hydrogen | **28)** Fluorine | **29)** Europium |

**Name the element which has the following number of particles**

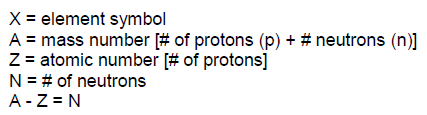
|  |  |  |
| --- | --- | --- |
| **30)** 26e, 29n, 26p | **31)** 53p, 74n | **32)** 2e (neutral atom) |
| **33)** 20p | **34)** 86e, 125n, 82p (charged atom) | **35)** Zero neutrons |

**How many protons, electrons, and neutrons does each element or ion have (list in that order). Assume the most abundant isotope (use the rounded mass from the periodic table).**

|  |  |  |
| --- | --- | --- |
| **36)** Ca2+ | **37)** F- | **38)** Fe3+ |
| **39)** O2- | **40)** N3- | **41)** Br- |

**If you know ONLY the following information, can you determine what the element is? Yes or No?**

|  |  |  |  |
| --- | --- | --- | --- |
| **42)** The number of   protons | **43)** The number of   neutrons | **44)** The number of   electrons in a neutral   atom | **45)** The number of electrons |

**A typical isotopic symbol Example: Key:  
takes this form: Fluorine**

**Fill in the missing items in the table below:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Name** | **Symbol** | **#’s** | | **Isotopic Symbol** |
| **46)** |  | Na | Z |  |  |
| A |  |
| # p |  |
| # e |  |
| # n |  |
| **47)** |  |  | Z |  |  |
| A |  |
| # p | **75** |
| # e |  |
| # n |  |
| **48)** | Potassium |  | Z |  |  |
| A |  |
| # p |  |
| # e |  |
| # n |  |

**Need/Want some more practice???**

|  |  |  |
| --- | --- | --- |
| <https://phet.colorado.edu/en/simulations/build-an-atom> | <https://phet.colorado.edu/en/simulations/isotopes-and-atomic-mass> | <https://phet.colorado.edu/en/simulations/build-a-nucleus> |