

Atomic Structure Worksheet

1. Name the three particles of the atom and their respective charges.

Particle	Charge type	Charge

2. The nucleus has a _____ charge and consist of _____ and _____.
3. Electrons are located in the _____ of an atom and carry _____ charge.
4. The number of protons in one atom of an element determines the atom's _____, and the number of electrons determines _____ of an element.
5. 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 _____ atomic number.
6. Give the symbol and number of protons in one atom of:
- Beryllium _____ Fluorine _____ Magnesium _____ Sulfur _____
- Cobalt _____ Tin _____ Arsenic _____ Gold _____
7. Give the symbol and number of electrons in a neutral atom of:
- Potassium _____ Argon _____ Calcium _____
- Chromium _____ Cadmium _____ Lead _____
8. Give the isotope symbol and number of neutrons in one atom of the following elements. Show your calculations.

Cesium – 133 _____

Iron – 54 _____

Ruthenium – 106 _____

Nickel – 58 _____

Polonium – 209 _____

Iodine – 135 _____

Indium – 115 _____

Phosphorous – 31 _____

Atomic Structure Worksheet

Answers

1. Name the three particles of the atom and their respective charges.

Particle	Charge type	Charge
Proton	Positive	+1
Neutron	Neutral	0
Electron	Negative	-1

2. The nucleus has a positive charge and consist of protons and neutrons.
3. Electrons are located in the orbitals of an atom and carry negative charge.
4. The number of protons in one atom of an element determines the atom's identity, and the number of electrons determines electrical charge of an element.
5. The atomic number tells you the number of protons in one atom of an element. It also tells you the number of electrons 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 atomic number.
6. Give the symbol and number of protons in one atom of:
- | | | | |
|-----------------------|---------------------|------------------------|--------------------|
| Beryllium <u>Be 4</u> | Fluorine <u>F 9</u> | Magnesium <u>Mg 12</u> | Sulfur <u>S 16</u> |
| Cobalt <u>Co 27</u> | Tin <u>Sn 50</u> | Arsenic <u>As 33</u> | Gold <u>Au 79</u> |
7. Give the symbol and number of electrons in a neutral atom of:
- | | | |
|-----------------------|----------------------|----------------------|
| Potassium <u>K 12</u> | Argon <u>Ar 18</u> | Calcium <u>Ca 20</u> |
| Chromium <u>Cr 24</u> | Cadmium <u>Cd 48</u> | Lead <u>Pb 82</u> |
8. Give the isotope symbol and number of neutrons in one atom of the following elements. Show your calculations.

Cesium – 133 Cs: 133 – 55 = 78

Iron – 54 Fe: 54 – 26 = 28

Ruthenium – 106 Ru: 106 – 44 = 62

Nickel – 58 Ni: 58 – 28 = 30

Polonium – 209 Po: 209 – 84 = 125

Iodine – 135 I: 135 – 53 = 82

Indium – 115 In: 115 – 49 = 66

Phosphorous – 31 P: 31 – 15 = 16