

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 _____

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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 Be 4 Fluorine F 9 Magnesium Mg 12 Sulfur S 16
Cobalt Co 27 Tin Sn 50 Arsenic As 33 Gold Au 79

7. Give the symbol and number of electrons in a neutral atom of:

Potassium K 12 Argon Ar 18 Calcium Ca 20
Chromium Cr 24 Cadmium Cd 48 Lead Pb 82

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