# What is the Structure of the Atom?

Worksheet

An atom consists of a positively charged nucleus (protons + neutrons) surrounded by negatively charged electrons in shells; the number of protons - the atomic number - defines which element it is.

## Questions

1. Which particle has no electric charge?

A) Proton
B) Electron
C) Neutron
D) Nucleus

2. What determines an element's atomic number?

A) Number of neutrons
B) Number of protons
C) Number of electrons only
D) Mass number

3. An atom with 6 protons and 7 neutrons has a mass number of

A) 6
B) 7
C) 13
D) 1

4. Where is most of an atom's mass located?

A) Electron shells
B) Nucleus
C) Valence shell
D) Outer orbit

5. How many protons, neutrons, and electrons are in a neutral carbon-12 atom (atomic number 6)?

6. An ion has 11 protons and 10 electrons. What is its charge?

7. An atom has 17 protons and a mass number of 35. How many neutrons does it have?

8. Define: What are the three subatomic particles?

9. Define: What is atomic number (Z)?

10. Define: What is mass number (A)?

# Answer Key

1. C) Neutron - Neutrons are electrically neutral.
2. B) Number of protons - Atomic number = number of protons.
3. C) 13 - Mass number = protons + neutrons = 6 + 7 = 13.
4. B) Nucleus - Protons and neutrons, which carry nearly all the mass, are in the nucleus.
5. Atomic number Z = 6 protons = 6 Mass number A = 12 neutrons = A Z = 12 6 = 6 Neutral atom electrons = protons = 6
6. Charge = protons electrons = 11 10 = +1 This is a Na ion (sodium cation).
7. Neutrons = mass number protons = 35 17 = 18 This is chlorine-35 (Cl-35).
8. Protons, neutrons (in the nucleus) and electrons (orbiting the nucleus).
9. The number of protons in an atom's nucleus - it defines the element.
10. The total number of protons plus neutrons in the nucleus.