

Basic Atomic Structure Worksheet

- Name the element which has the following numbers of particles. Be specific. (Include charges and mass numbers where possible.)
26 electrons, 30 neutrons, 26 protons _____
53 protons, 72 neutrons _____
2 electrons (neutral atom) _____
20 protons _____
78 electrons, 126 neutrons, 82 protons (charged atom) _____
0 neutrons _____
- How many protons are in the nucleus of an atom with atomic number 15? _____
- How many electrons are in an atom with atomic number 20? _____
- How many neutrons are in the nucleus of an atom with atomic number 25? (Use the periodic table for mass number) _____
- What is the mass number of an atom with 3 protons, 4 neutrons, and 3 electrons? _____
- How many neutrons are in an atom that has a mass number of 55 and atomic number of 25? _____
- Define the following terms:
 - Nucleons _____
 - Atomic number _____
 - Isotopes _____
 - Mass number _____
- Write the three isotopes of hydrogen?
 - _____
 - _____
 - _____
- To calculate the number of neutrons in an atom, you must first determine the _____ and then subtract the _____ from it.
- Write the numbers of protons, electrons, and neutrons for the following elements. Show calculations for the number of neutrons.

$^{56}\text{Fe}_{26}$	Protons _____	Electrons _____	Neutrons _____
$^{17}\text{O}_8$	Protons _____	Electrons _____	Neutrons _____
$^4\text{He}_2$	Protons _____	Electrons _____	Neutrons _____
$^{14}\text{C}_6$	Protons _____	Electrons _____	Neutrons _____

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Answers

- Name the element which has the following numbers of particles. Be specific. (Include charges and mass numbers where possible.)
 - 26 electrons, 30 neutrons, 26 protons Iron - 56
 - 53 protons, 72 neutrons Iodine - 125
 - 2 electrons (neutral atom) Helium
 - 20 protons Calcium
 - 78 electrons, 126 neutrons, 82 protons (charged atom) Lead-208 (+4) or $^{208}\text{Pb}^{4+}$
 - 0 neutrons Hydrogen
- How many protons are in the nucleus of an atom with atomic number 15? 15
- How many electrons are in an atom with atomic number 20? 20
- How many neutrons are in the nucleus of an atom with atomic number 25? (Use the periodic table for mass number) 30
- What is the mass number of an atom with 3 protons, 4 neutrons, and 3 electrons? 7
- How many neutrons are in an atom that has a mass number of 55 and atomic number of 25? 30
- Define the following terms:
 - Nucleons Particles in the nucleus of an atom like neutrons and protons
 - Atomic number Number of protons in the nucleus of an atom
 - Isotopes Atoms of an element that have different number of neutrons
 - Mass number Total number of protons and neutrons in the nucleus of an atom
- Write the three isotopes of hydrogen?
 - Hydrogen - 1 (protium)
 - Hydrogen - 2 (deuterium)
 - Hydrogen - 3 (tritium)
- To calculate the number of neutrons in an atom, you must first determine the mass number and then subtract the atomic number from it.
- Write the numbers of protons, electrons, and neutrons for the following elements. Show calculations for the number of neutrons.

$^{56}\text{Fe}_{26}$	Protons	<u>26</u>	Electrons	<u>26</u>	Neutrons	<u>$56 - 26 = 30$</u>
$^{17}\text{O}_8$	Protons	<u>8</u>	Electrons	<u>8</u>	Neutrons	<u>$17 - 8 = 9$</u>
$^4\text{He}_2$	Protons	<u>2</u>	Electrons	<u>2</u>	Neutrons	<u>$4 - 2 = 2$</u>
$^{14}\text{C}_6$	Protons	<u>6</u>	Electrons	<u>6</u>	Neutrons	<u>$14 - 6 = 8$</u>