

Name : _____

Date : _____

SUBATOMIC PARTICLES AND ISOTOPE WORKSHEET

1. Fill in the blanks with the correct answer for the following:

Isotope Name	# of Protons	# of Neutrons	# of Electrons	Net Charge
${}_{82}^{205}\text{Pb}$				
${}_{29}^{64}\text{Cu}$				
${}_{38}^{88}\text{Sr}^{2+}$				
${}_{15}^{31}\text{P}^{3-}$				
${}_{31}^{64}\text{Ga}^{3+}$				
${}_{16}^{35}\text{S}^{2-}$				

2. Write the complete symbol (${}^A_Z\text{X}$) of the following:

- An isotope of chromium that has 3 more neutrons than ${}^{54}\text{Cr}$. _____
- An atom of O that has 4 more subatomic particles than ${}^{13}\text{C}$. _____
- An atom of silver which has the same number of electrons, protons, and neutrons. _____
- An atom with 6 more neutrons and 3 more protons than ${}^{37}\text{Cl}$. _____
- An isotope of bromine that contains the same number of neutrons as arsenic-74. _____
- An isotope of manganese containing the same subatomic particles as cobalt-60. _____

3. Identify the neutral atom described by name and mass number. Write in the hyphenated notation.(e.g., Oxygen-16).

- The atom with 2 neutrons and 1 proton is _____
- The atom with 17 electrons and 18 neutrons is _____
- The atom with 6 protons and 8 neutrons is _____

4. All atoms of the same element must contain the same number of

- (A) protons (B) neutrons (C) electrons plus protons (D) protons plus neutrons

5. What is the total number of protons in a nucleus of magnesium-23?

- (A) 23 (B) 11 (C) 12 (D) 16

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Answers

1. Fill in the blanks with the correct answer for the following:

Isotope Name	# of Protons	# of Neutrons	# of Electrons	Net Charge
${}_{82}^{205}\text{Pb}$	46	60	46	0
${}_{29}^{64}\text{Cu}$	29	35	29	0
${}_{38}^{88}\text{Sr}^{2+}$	38	50	36	+2
${}_{15}^{31}\text{P}^{3-}$	15	18	16	-3
${}_{31}^{64}\text{Ga}^{3+}$	31	33	28	+3
${}_{16}^{35}\text{S}^{2-}$	16	19	18	-2

2. Write the complete symbol (${}^A_Z\text{X}$) of the following:

- a. An isotope of chromium that has 3 more neutrons than ${}^{54}\text{Cr}$. ${}_{24}^{57}\text{Cr}$
- b. An atom of O that has 4 more subatomic particles than ${}^{13}\text{C}$. ${}_{8}^{15}\text{O}$
- c. An atom of silver which has the same number of electrons, protons, and neutrons. ${}_{47}^{94}\text{Ag}$
- d. An atom with 6 more neutrons and 3 more protons than ${}^{37}\text{Cl}$. ${}_{20}^{46}\text{Ca}$
- e. An isotope of bromine that contains the same number of neutrons as arsenic-74. ${}_{35}^{76}\text{Br}$
- f. An isotope of manganese containing the same subatomic particles as cobalt-60. ${}_{25}^{60}\text{Mn}$

3. Identify the neutral atom described by name and mass number. Write in the hyphenated notation. (e.g., Oxygen-16).

- i. The atom with 2 neutrons and 1 proton is Hydrogen-3
- ii. The atom with 17 electrons and 18 neutrons is Chlorine-35
- iii. The atom with 6 protons and 8 neutrons is Carbon-14

4. All atoms of the same element must contain the same number of

- (A) protons (B) neutrons (C) electrons plus protons (D) protons plus neutrons

5. What is the total number of protons in a nucleus of magnesium-23?

- (A) 23 (B) 11 (C) 12 (D) 16