

1. The table below shows the number of subatomic particles in atom X and in atom Z.

Subatomic Particles in Two Atoms

Atom	Number of Protons	Number of Neutrons	Number of Electrons
X	6	6	6
Z	6	7	6

Atom X and atom Z are isotopes of the element

- A) aluminum B) carbon C) magnesium D) nitrogen

2. The greatest composition by mass in an atom of $^{17}_8\text{O}$ is due to the total mass of its

- A) electrons B) neutrons
C) positrons D) protons

3. The table below gives information about the nucleus of each of four atoms.

Nuclei of Four Atoms

Atom	Number of Protons	Number of Neutrons
A	6	6
D	6	7
E	7	7
G	7	8

How many different elements are represented by the nuclei in the table?

- A) 1 B) 2 C) 3 D) 4

4. The nucleus of an atom of cobalt-58 contains

- A) 27 protons and 31 neutrons
B) 27 protons and 32 neutrons
C) 59 protons and 60 neutrons
D) 60 protons and 60 neutrons

5. Atoms of the same element that have different numbers of neutrons are classified as

- A) charged atoms B) charged nuclei
C) isomers D) isotopes

6. All the isotopes of a given atom have

- A) the same mass number and the same atomic number
B) the same mass number but different atomic numbers
C) different mass numbers but the same atomic number
D) different mass numbers and different atomic numbers

7. All isotopes of a given element must have the same

- A) atomic mass
B) atomic number
C) mass number
D) number of neutrons

8. What is the total number of neutrons in an atom of O-18?

- A) 18 B) 16 C) 10 D) 8

9. The most common isotope of chromium has a mass number of 52. Which notation represents a different isotope of chromium?

- A) $^{52}_{24}\text{Cr}$ B) $^{54}_{24}\text{Cr}$
C) $^{24}_{52}\text{Cr}$ D) $^{24}_{54}\text{Cr}$

10. Which particles are isotopes of each other?

- A) ^1_1X and ^3_1X B) ^2_1X and ^3_2X
C) ^2_1X and ^4_2X D) ^3_1X and ^3_2X

11. The total number of protons, electrons, and neutrons in each of four different atoms are shown in the table below.

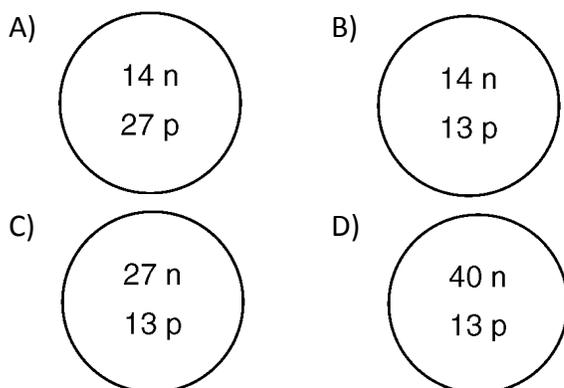
Subatomic Particles in Four Different Atoms

Atom	Total Number of Protons	Total Number of Electrons	Total Number of Neutrons
A	6	6	7
D	6	6	8
X	7	7	8
Z	8	8	9

Which two atoms are isotopes of the same element?

- A) A and D B) A and Z C) X and D D) X and Z

12. Which diagram represents the nucleus of an atom of $^{27}_{13}\text{Al}$?



13. Which atoms contain the same number of neutrons?

- A) ^1_1H and ^3_2He B) ^2_1H and ^4_2He
 C) ^3_1H and ^3_2He D) ^3_1H and ^4_2He

14. The nuclides $^{14}_6\text{C}$ and $^{14}_7\text{N}$ are similar in that they both have the same

- A) mass number
 B) atomic number
 C) number of neutrons
 D) nuclear charge

15. If 75.0% of the isotopes of an element have a mass of 35.0 amu and 25.0% of the isotopes have a mass of 37.0 amu, what is the atomic mass of the element?

- A) 35.0 amu B) 36.0 amu
 C) 35.5 amu D) 37.0 amu

16. The atomic mass of titanium is 47.88 atomic mass units. This atomic mass represents the

- A) total mass of all the protons and neutrons in an atom of Ti
 B) total mass of all the protons, neutrons, and electrons in an atom of Ti
 C) weighted average mass of the most abundant isotope of Ti
 D) weighted average mass of all the naturally occurring isotopes of Ti

17. What information is necessary to determine the atomic mass of the element chlorine?

- A) the atomic mass of each artificially produced isotope of chlorine, only
 B) the relative abundance of each naturally occurring isotope of chlorine, only
 C) the atomic mass and the relative abundance of each naturally occurring isotope of chlorine
 D) the atomic mass and the relative abundance of each naturally occurring and artificially produced isotope of chlorine