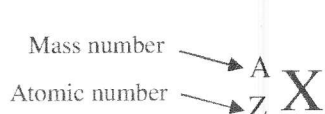


Isotope Notation

Name _____

Any given element can have more than one isotope. To distinguish between the different isotopes of an atom, the element is named with its mass number, for example lithium-7. Remember that the **mass number** is the number of protons and neutrons. When symbols are used to represent an isotope the mass number is written next to the symbol on the top left. The atomic number is written on the bottom left. Recall that the **atomic number** is the number of protons.

EXAMPLES



Lithium-7



Answer the following questions about atoms.

1. The identity of an atom is determined by the number of _____.
2. The particle(s) found inside the nucleus are called: _____.
3. The number of protons and neutrons combined is called the _____.
4. In large atoms the number of protons is _____ than the number of neutrons.
5. The number of protons is also called the _____.
6. Isotopes have the same number of _____, but different numbers of _____.
7. The number of protons found in a sulfur atom is _____.
8. The number of neutrons found in an aluminum-27 atom is _____.
9. The number of electrons found in a zinc atom is _____.
10. What is the name of the element with 82 protons? _____.

Give the symbols for the nuclides described by the following particles. Include the atomic number and the mass number.

- | | |
|------------------------------|-----------------------------|
| 11. 92 protons, 145 neutrons | 15. 20 protons, 20 neutrons |
| 12. 8 protons, 10 neutrons | 16. 22 protons, 23 neutrons |
| 13. 82 protons, 125 neutrons | 17. 18 protons, 22 neutrons |
| 14. 80 protons, 119 neutrons | 18. 25 protons, 32 neutrons |

Determine the number of protons and neutrons from the following symbols.

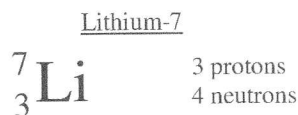
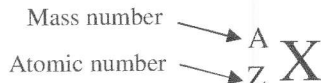
- | | | |
|------------------------------|------------------------------|----------------------------|
| 19. ${}^{10}_5\text{B}$ | 23. ${}^{165}_{66}\text{Dy}$ | 27. ${}^{126}\text{Te}$ |
| 20. ${}^{15}_7\text{N}$ | 24. ${}^{56}\text{Fe}$ | 28. ${}^{35}\text{Cl}$ |
| 21. ${}^{79}_{34}\text{Se}$ | 25. ${}^{151}\text{Sm}$ | 29. ${}^{107}\text{Ag}$ |
| 22. ${}^{119}_{50}\text{Sn}$ | 26. ${}^{195}\text{Pt}$ | 30. ${}^{93}_{41}\text{?}$ |

Isotope Notation

Name _____

Any given element can have more than one isotope. To distinguish between the different isotopes of an atom, the element is named with its mass number, for example lithium-7. Remember that the **mass number** is the number of protons and neutrons. When symbols are used to represent an isotope the mass number is written next to the symbol on the top left. The atomic number is written on the bottom left. Recall that the **atomic number** is the number of protons.

EXAMPLES



Answer the following questions about atoms.

- The identity of an atom is determined by the number of protons.
- The particle(s) found inside the nucleus are called: nucleons.
- The number of protons and neutrons combined is called the mass number.
- In large atoms the number of protons is more than the number of neutrons.
- The number of protons is also called the atomic number.
- Isotopes have the same number of protons, but different numbers of neutrons.
- The number of protons found in a sulfur atom is 16.
- The number of neutrons found in an aluminum-27 atom is 14.
- The number of electrons found in a zinc atom is 30.
- What is the name of the element with 82 protons? lead.

Give the symbols for the nuclides described by the following particles. Include the atomic number and the mass number.

- | | | | |
|------------------------------|--------------------------|-----------------------------|-------------------------|
| 11. 92 protons, 145 neutrons | ${}^{237}_{92}\text{U}$ | 15. 20 protons, 20 neutrons | ${}^{40}_{20}\text{Ca}$ |
| 12. 8 protons, 10 neutrons | ${}^{18}_8\text{O}$ | 16. 22 protons, 23 neutrons | ${}^{45}_{22}\text{Ti}$ |
| 13. 82 protons, 125 neutrons | ${}^{207}_{82}\text{Pb}$ | 17. 18 protons, 22 neutrons | ${}^{40}_{18}\text{Ar}$ |
| 14. 80 protons, 119 neutrons | ${}^{199}_{80}\text{Hg}$ | 18. 25 protons, 32 neutrons | ${}^{57}_{25}\text{Mn}$ |

Determine the number of protons and neutrons from the following symbols.

- | | | |
|--|---|--|
| 19. ${}^{10}_5\text{B}$ 5p ⁺ , 5n ⁰ | 23. ${}^{165}_{66}\text{Dy}$ 66p ⁺ , 99n ⁰ | 27. ${}^{126}_{52}\text{Te}$ 52p ⁺ , 74n ⁰ |
| 20. ${}^{15}_7\text{N}$ 7p ⁺ , 8n ⁰ | 24. ${}^{56}_{26}\text{Fe}$ 26p ⁺ , 30n ⁰ | 28. ${}^{35}_{17}\text{Cl}$ 17p ⁺ , 18n ⁰ |
| 21. ${}^{79}_{34}\text{Se}$ 34p ⁺ , 45n ⁰ | 25. ${}^{151}_{62}\text{Sm}$ 62p ⁺ , 89n ⁰ | 29. ${}^{107}_{47}\text{Ag}$ 47p ⁺ , 60n ⁰ |
| 22. ${}^{119}_{50}\text{Sn}$ 50p ⁺ , 69n ⁰ | 26. ${}^{195}_{78}\text{Pt}$ 78p ⁺ , 117n ⁰ | 30. ${}^{93}_{41}\text{?}$ 41p ⁺ , 52n ⁰ |