Atoms and isotopes

Name or nickname _____ Date _____



Find the particle clues. Circle one answer or write the requested number. Explain your reasoning to a partner after you finish.

1. Which particle is uncharged?

A. Proton

B. Neutron

C. Electron

2. A neutral carbon atom has 6 protons. How many electrons does it have? Enter digits only.

3. An atom has atomic number 8 and mass number 18. How many neutrons does it have? Enter digits only.

4. Carbon-12 and carbon-13 have different numbers of protons.

A. True

B. False

5. An atom has 7 protons and 8 neutrons. What is its mass number?

A. 1

B. 7

C. 8

D. 15

6. Which particle number identifies an element?

A. Proton number

B. Neutron number

C. Electron number alone

D. Protons plus electrons

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Follow the charge clues

Name or nickname _____ Date _____

Use these clues for single atoms and monatomic ions: mass number = protons + neutrons; charge in elementary-charge units = protons - electrons.

7. A sodium ion has 11 protons and a charge of +1. How many electrons does it have? Enter digits only.

8. A chloride ion has 17 protons and a charge of -1. How many electrons does it have? Enter digits only.

9. In ordinary ion formation by electron transfer, the proton number stays the same.

A. True

B. False

10. Which pair represents isotopes of the same element? Each pair is written as (protons, neutrons).

A. (6, 6) and (7, 6)

B. (8, 8) and (8, 10)

C. (11, 12) and (12, 11)

D. (3, 4) and (4, 3)

11. A magnesium-24 ion has 12 protons and a charge of +2. How many electrons does it have? Enter digits only.

12. A learner says: "A positive ion has gained positive protons." For ordinary ion formation by electron transfer, what is the better explanation?

A. It lost negative electrons.

B. It gained negative electrons.

C. Every neutron became a proton.

D. Its mass number must become zero.

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