

Chemistry Ch.4 Review

Name: CALVIN Date:

Hour:

atom

1. the smallest particle of an element that retains the properties of that element

proton

2. a positively charged subatomic particle

electron

3. a negatively charged subatomic particle

neutron

4. a subatomic particle with no charge

nucleus

5. the central part of an atom, containing protons and neutrons

isotopes

6. atoms with the same number of protons, but different numbers of neutrons in the nucleus of an

atom

mass #

7. the total number of protons and neutrons in the nucleus of an atom

atomic #

8. the number of protons in the nucleus of an element

ions

9. atoms with the same number of protons, but different numbers of electrons

atom

10. The smallest particle of an element that retains the properties of that element is a(n) ____.

C

11. Dalton hypothesized that all atoms of an element are identical. It is now known that ____.

a. all of Dalton's hypotheses are correct

b. atoms of an element can have different numbers of protons

c. ions and isotopes exist

d. atoms are not divisible

D

12. Which of the following is true about subatomic particles?

a. Electrons are negatively charged and are the heaviest subatomic particle.

b. Protons are positively charged and the lightest subatomic particle.

c. Neutrons have no charge and are the lightest subatomic particle.

d. The mass of a neutron nearly equals the mass of a proton.

protons + neutrons

13. The particles that are found in the nucleus of an atom are ____.

D

14. An element has an atomic number of 76. The number of protons and electrons in a neutral atom of the element are ____.

a. 152 protons and 76 electrons

c. 38 protons and 38 electrons

b. 76 protons and 0 electrons

d. 76 protons and 76 electrons

D

15. The sum of the protons and neutrons in an atom equals the ____.

a. atomic number

c. subatomic particle number

b. nucleus number

d. mass number

mass #

16. What does the number 84 in the name krypton-84 represent?

of protons

17. All atoms of the same element have the same ____.

neutrons 18. Isotopes of the same element have different ____.

A 19. In which of the following sets is the symbol of the element, the number of protons, and the number of electrons given correctly?

- (a) In, 49 protons, 49 electrons c. Cs, 55 protons, 132.9 electrons
b. Zn, 30 protons, 60 electrons d. F, 19 protons, 19 electrons

B 20. The mass number of an element is equal to ____.

- a. the total number of electrons in the nucleus
(b) the total number of protons and neutrons in the nucleus
c. less than twice the atomic number
d. a constant number for the lighter elements

A 21. How many protons, electrons, and neutrons does an atom with atomic number 50 and mass number 125 contain?

- (a) 50 protons, 50 electrons, 75 neutrons c. 120 neutrons, 50 protons, 75 electrons
b. 75 electrons, 50 protons, 50 neutrons d. 70 neutrons, 75 protons, 50 electrons

mass# - protons 22. How is the number of neutrons in the nucleus of an atom calculated?

D 23. In which of the following is the number of neutrons correctly represented?

${}^{19}_9\text{F}$ has 0 neutrons.

c. ${}^{24}_{12}\text{Mg}$ has 24 neutrons.

${}^{75}_{33}\text{As}$ has 108 neutrons.

(d) ${}^{238}_{92}\text{U}$ has 146 neutrons.

Carbon-12

 24. The periodic table is based on what isotope of Carbon?

B 25. Which of the following statements is NOT true?

- a. Protons have a positive charge.
(b) Electrons are negatively charged and have a mass of 1 amu.
c. The nucleus of an atom is positively charged.
d. Neutrons are located in the nucleus of an atom.

+ 0 -
6 7 6

 26. List the number of protons, neutrons, and electrons in ${}^{13}_6\text{C}$

B. 25 amu

27. Consider an element Z that has two naturally occurring isotopes with the following percent abundances: the isotope with a mass number of 24 is 63% abundant; the isotope with a mass number of 26 is 24% abundant; the isotope with a mass number of 28 is 13% abundant.. What is the average atomic mass for element Z?

$$(24 \times .63) + (26 \times .24) + (28 \times .13) = \boxed{25 \text{ amu}}$$

a. 24 amu

c. 26 amu

b. 25 amu

d. 28 amu

___ 28. Complete the chart

Subatomic particle	Location	Relative mass	Relative charge
Proton	Nucleus	1	+1
Neutron	Nucleus	1	0
Electron	Orbit	0	-1

C. 29. What is the total number of subatomic particles in the nucleus of an atom of $^{209}_{83}\text{Bi}$

a. 83

c. 209

b. 126

d. 292

Alpha 30. What particles were shot at the gold foil in Rutherford's experiment?

lost 2 31. An ion with a charge of +2 has (gained or lost ___ electrons):

gained 1 32. An ion with a charge of -1 has (gained or lost ___ electrons):

True 33. Ions have a different number of electrons.

False 34. Isotopes have a different number of ~~electrons~~ neutrons.

False 35. The relative mass of the proton is more than equal to that of the electron.

True 36. The periodic table is arranged in order of increasing atomic number.

Go Vikings!!

Name:

Date:

Hour:

Ch.4 Review

Chemistry Ch.4 Test topics

Ions vs. isotopes

What are they? How are they different?

Atomic number, atomic mass, atomic symbol

Subatomic particles

- 1) How to find # of each for any given element/ion/isotope
 - 2) Location, relative mass, relative charge
- Hyphen notation and Symbol notation (know what they represent and how to read them)

Weighted average ~ (how to find it based on given isotopes)

Why the atomic masses of each element are not WHOLE numbers

Dalton's atomic theory

Main points, any differences from our current knowledge?

Experiments ~ main set up and findings of Millikin, Rutherford, and Thomson

Atomic mass unit ~ what isotope of carbon is the periodic table based on?

** Prepare a chart below (proton, neutron, electron) showing TWO negative ions, TWO positive ions, TWO isotopes

Element	Proton	Neutron	Electron
Ex. S ⁻²	16	16	18

Reasonable

ON BACK

Ch.4 31, 32, 39, 41, 65

31) weighted average

32) a) ${}^6_3\text{Li}$, ${}^7_3\text{Li}$

+	3	3
0	3	4
	3	2

b) ${}^{42}_{20}\text{Ca}$, ${}^{44}_{20}\text{Ca}$

+	20	20
0	22	24
	20	20

c) ${}^{78}_{34}\text{Se}$, ${}^{80}_{34}\text{Se}$

+	34	34
0	44	46
	34	34

39) Repel

41) $\frac{+++}{---}$ So plus one

65) $(204 \times 0.014) + (206 \times 0.241) + (207 \times 0.221) + (208 \times 0.524) =$

207 amu