

Name Answer Key Hour _____

Chapter 4 Review (Honors Chemistry)

Use the given number of neutrons and electrons to fill in the chart and determine whether the atom is...

Common: all information is exactly like the information on the periodic table.

Ion: the electron number differs from the proton number, but all other information is the same.

Isotope: the mass of the atom is different than the most common version.

	ELEMENT	ATOMIC NUMBER	MASS	PROTON NUMBER	NEUTRON NUMBER	ELECTRON NUMBER	ISOTOPE, ION OR COMMON
1.	Sc	21	45	21	24	18	Cation, Sc^{3+}
2.	K	19	42	19	23	19	Isotope
3.	Cobalt	27	59	27	32	29	Anion, Co^{2-}
4.	S	16	32	16	16	18	Anion, S^{2-}
5.	Argon	18	40	18	22	18	Common
6.	Uranium	92	238	92	146	92	Common
7.	Ca	20	43	20	23	20	Isotope
8.	P	15	31	15	16	18	Anion, P^{3-}
9.	Pb	82	225	82	143	82	Isotope
10.	Zinc	30	65	30	35	30	Common
11.	Aluminum	13	30	13	17	13	Isotope
12.	Potassium	19	39	19	20	18	Cation, K^+
13.	Ce	58	142	58	84	58	Isotope
14.	Sodium	11	23	11	12	10	Cation, Na^+
15.	Chlorine	17	35	17	18	18	Anion, Cl^-
16.	Radon	86	222	86	136	86	Common
17.	Mg	12	22	12	10	12	Isotope
18.	Boron	5	11	5	6	5	Common
19.	Nickel	28	59	28	31	26	Cation, Ni^{2+}
20.	Bismuth	83	209	83	126	83	Common
21.	Iridium	77	196	77	119	77	Isotope
22.	Hg	80	201	80	121	78	Cation, Hg^{2+}
23.	Titanium	22	50	22	28	22	ISOTOPE

Complete the following table!

	Element	Atomic #	Mass #	Protons	Electrons	Neutrons
24.	Calcium - 43	20	43	20	20	23
25.	Li ⁺	3	7	3	2	4
26.	Sulfur - 36	16	36	16	16	20
27.	O ²⁻	8	16	8	10	8

28. Use the following information to determine the average atomic mass of chlorine. The two isotopes known are chlorine-35 (mass = 35.0 amu) that has a relative abundance of 75.4% and chlorine-37 (mass = 37.0 amu) with a relative abundance of 24.6%.

$$35 \times .754 = 26.390$$

35.492

$$37 \times .246 = 9.102$$

29. Neon has two isotopes. Neon-20 has a mass of 19.992 amu and neon-22 has a mass of 21.991 amu. In any sample of 100 neon atoms, 90 will be neon-20 and 10 will be neon-22. Calculate the average atomic mass of neon.

$$20 \times .9 = 18.000$$

$$22 \times .1 = 2.200$$

20.200

30. Sulfur has four isotopes. Sulfur-32 (mass = 31.972 amu) with a natural abundance of 95.0%, Sulfur-33 (mass = 32.971 amu) at 0.76%, Sulfur-34 (mass = 33.967 amu) at 4.22%, and Sulfur-36 (mass = 35.967 amu) that is naturally abundant at 0.014%. Calculate the average atomic mass.

$$32 \times .95 = 30.400$$

$$33 \times .0076 = .251$$

$$34 \times .0422 = 1.435$$

$$36 \times .00014 = .005$$

32.091

Give the charge when given the electron number, write neutral if there is no charge

Nitrogen with 10 electrons.	N ³⁻	Oxygen with 10 electrons.	O ²⁻
Manganese with 27 electrons.	Mn ²⁻	Krypton with 36 electrons	Neutral
Copper with 27 electrons.	Cu ²⁺	Phosphorus with 18 electrons.	P ³⁻
Iron with 24 electrons.	Fe ²⁺	Aluminum with 10 electrons.	Al ³⁺
Gold with 79 electrons.	Neutral	Uranium with 86 electrons.	U ⁶⁺
Barium with 54 electrons.	Ba ²⁺	Calcium with 18 electrons.	Ca ²⁺
Bromine with 36 electrons.	Br ⁻	Iodine with 54 electrons.	I ⁻