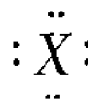


Station = Valence Electrons, Lewis Dot, Ions

- An atom in the ground state has seven valence electrons. This atom could be an atom of element?
A) calcium B) fluorine C) oxygen D) sodium
- Lithium and potassium have similar chemical properties because the atoms of both elements have the same
A) mass number
B) atomic number
C) number of electron shells
D) number of valence electrons
- In the ground state, which atom has a completely filled valence electron shell?
A) C B) V C) Ne D) Sb
- What is the total number of valence electrons in a calcium atom in the ground state?
A) 8 B) 2 C) 18 D) 20
- What is the total number of valence electrons in a germanium atom in the ground state?
A) 22 B) 2 C) 32 D) 4
- Which Lewis electron-dot diagram is correct for a S^{2-} ion?
A) $[\cdot\ddot{S}\cdot]^{2-}$ B) $[\ddot{S}]^{2-}$
C) $[\cdot\ddot{S}\cdot]^{2-}$ D) $[\cdot\ddot{S}\cdot]^{2-}$
- Which Lewis electron-dot structure is drawn correctly for the atom it represents?
A) $\cdot\ddot{N}$ B) $\cdot\ddot{F}\cdot$ C) $\cdot\ddot{O}\cdot$ D) $\cdot\ddot{Ne}\cdot$
- Which is the electron-dot symbol for an atom with an electron configuration of 2-5?
A) $\cdot\ddot{X}\cdot$ B) $\cdot\ddot{X}\cdot$ C) $\cdot\ddot{X}\cdot$ D) $\cdot\ddot{X}\cdot$
- Atom X has an electron configuration of 2-8-2. Which electron-dot symbol correctly represents this atom?
A) $\cdot\ddot{X}\cdot$ B) $\cdot\ddot{X}\cdot$ C) $X:$ D) $\cdot\ddot{X}:$
- Which electron-dot symbol represents an atom of chlorine in the ground state?
A) $Cl:$ B) $\cdot\ddot{Cl}\cdot$ C) $\cdot\ddot{Cl}\cdot$ D) $\cdot\ddot{Cl}\cdot$
- What is the total number of electrons in a S^{2-} ion?
A) 10 B) 14 C) 16 D) 18
- What is the total number of electrons in a Mg^{2+} ion?
A) 10 B) 12 C) 14 D) 24

- What is the net charge on an ion that has 9 protons, 11 neutrons, and 10 electrons?
A) 1+ B) 2+ C) 1- D) 2-
- Which electron configuration is correct for a sodium ion?
A) 2-7 B) 2-8 C) 2-8-1 D) 2-8-2
- An oxide ion (O^{2-}) formed from an oxygen-18 atom contains exactly
A) 8 protons, 8 neutrons, 10 electrons
B) 8 protons, 10 neutrons, 8 electrons
C) 8 protons, 10 neutrons, 10 electrons
D) 10 protons, 8 neutrons, 8 electrons
- Base your answer to the following question on



The electron dot symbol above represents an ion of atom X . Atom X could be an atom of

- A) K B) H C) I D) N
- Which is the correct electron dot representation of an atom of sulfur in the ground state?
A) $S:$ B) $\cdot\ddot{S}\cdot$ C) $\cdot\ddot{S}\cdot$ D) $\cdot\ddot{S}\cdot$
- Which principal energy level do the valence electrons of a carbon atom in the ground state occupy?
A) 1 B) 2 C) 3 D) 4
- What is the total number of valence electrons in an atom of xenon, Xe?
A) 0 B) 2 C) 8 D) 18
- What is the total number of valence electrons in an atom with a total of 13 protons?
A) 1 B) 2 C) 3 D) 4
- Which of these elements has an atom with the most stable outer electron configuration?
A) Ne B) Cl C) Ca D) Na
- Sodium atoms differ from sodium ions in that sodium atoms contain
A) one more proton B) one less proton
C) one more electron D) one less electron
- Which ion has the same electron configuration as an H^{-} ion?
A) Cl^{-} B) F^{-} C) K^{+} D) Li^{+}

24. Base your answer to the following question on the information below.

Naturally Occurring Isotopes of Sulfur

Isotope	Atomic Mass (atomic mass units, u)	Natural Abundance (%)
^{32}S	31.97	94.93
^{33}S	32.97	0.76
^{34}S	33.97	4.29
^{36}S	35.97	0.02

In the space below, draw a Lewis electron-dot diagram for an atom of sulfur-33.

25. Explain, in terms of electron configuration, why selenium and sulfur have similar chemical properties.

26. Base your answer to the following question on the information below.

A safe level of fluoride ions is added to many public drinking water supplies. Fluoride ions have been found to help prevent tooth decay. Another common source of fluoride ions is toothpaste. One of the fluoride compounds used in toothpaste is tin (II) fluoride.

A town located downstream from a chemical plant was concerned about fluoride ions from the plant leaking into its drinking water. According to the Environmental Protection Agency, the fluoride ion concentration in drinking water cannot exceed 4 ppm. The town hired a chemist to analyze its water. The chemist determined that a 175-gram sample of the town's water contains 0.000 250 grams of fluoride ions.

Draw a Lewis electron-dot diagram for a fluoride ion.

27. Base your answer to the following question on Chlorine is a member of the halogen (salt-forming) group of elements. It is a greenish-yellow gas, combining directly with nearly all elements. In nature it is found in the combined state only, chiefly with sodium as common salt (NaCl), carnallite, and sylvite.

a Draw the electron-dot diagram of an atom of chlorine.

b From the passage above give one *physical* property and one chemical property of chlorine?