

Atoms and Ions Worksheet

1. What is the charge on an atom? Explain why this is so.

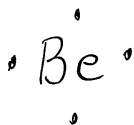
Zero

equal number of protons and electrons

2. Beryllium has an atomic number of 4 and a mass number of 9.

(a) Beryllium has 4 p+, 5 n0, and 4 e-.

- (b) Draw a Lewis (electron dot) diagram for beryllium.



3. How is an atom different from an ion?

an atom has an equal number of protons and electrons

an ion has lost or gained electrons

4. Why do atoms gain or lose electrons to get 8 in the valence shell?

the atom is most stable when it has 8 electrons in its valence shell

5. What is an anion? How does an anion form?

negative ion

atom gains electrons

6. What is a cation? How does a cation form

positive ion

atom loses electrons

7. Complete the following table.

Element Name	Chemical Symbol	Number of Valence Electrons	Does the element lose or gain electrons?	Ionic Symbol
Lithium	Li	1	lose	Li^+
nitrogen	N	5	gain	N^{3-}
Boron	B	3	lose	B^{3+}
fluorine	F	7	gain	F^-
Sulfur	S	6	gain	S^{2-}
phosphorus	P	5	gain	P^{3-}
Oxygen	O	6	gain	O^{2-}
Calcium	Ca	2	lose	Ca^{2+}
Magnesium	Mg	2	lose	Mg^{2+}
sodium	Na	1	lose	Na^+
Potassium	K	1	lose	K^+