

Periodic Table Basics

1 P = 1
N = 0
H E = 1
Hydrogen
1.00

H•

Atomic Number

Atom's Name

Atomic Mass

Lewis Diagram

2 P = 2
N = 2
He E = 2
Helium
4.00

He••

3 P = 3
N = 4
Li E = 3
Lithium
6.94

4 P = 4
N = 5
Be E = 4
Beryllium
9.01

5 P = 5
N = 6
B E = 5
Boron
10.81

6 P = 6
N = 6
C E = 6
Carbon
12.01

7 P = 7
N = 7
N E = 7
Nitrogen
14.00

8 P = 8
N = 8
O E = 8
Oxygen
16.00

9 P = 9
N = 10
F E = 9
Fluorine
19.00

10 P = 10
N = 10
Ne E = 10
Neon
20.18

Li•

Be••

B••

•C••

•N••

•O••

•F••

•Ne••

11 P = 11
N = 12
Na E = 11
Sodium
22.99

12 P = 12
N = 12
Mg E = 12
Magnesium
24.30

13 P = 13
N = 14
Al E = 13
Aluminum
26.98

14 P = 14
N = 14
Si E = 14
Silicon
28.09

15 P = 15
N = 16
P E = 15
Phosphorus
30.99

16 P = 16
N = 16
S E = 16
Sulfur
32.07

17 P = 17
N = 18
Cl E = 17
Chlorine
35.45

18 P = 18
N = 22
Ar E = 18
Argon
39.95

Na•

Mg••

Al••

•Si••

•P••

•S••

•Cl••

•Ar••

Periodic Table Basics

Step 1: Complete the Periodic Table Basics Chart. Your chart will include the element's:

- (a) atomic number
- (b) name
- (c) atomic mass
- (d) number of protons, neutrons, and electrons
- (e) Lewis diagram

Step 2: Answer the following questions in your notes.

1. What is meant by the following statement:

An ion is an atom that has gained or lost electrons in order to have a full outer shell and by doing so has become either negatively or positively charged.
2. Do all atoms require the same number of electrons to complete their outermost shell? Explain.

No - Shell #1 hold 2 electrons, shells #2 and #3 hold 8 electrons each
3. Which three elements on your chart have a complete outer shell? Give the name and symbol for each. **Helium (He), neon (Ne), argon (Ar)**
4. What do you notice about the location of the elements in question # 3? **Group 8 - Noble Gases**
5. Which elements have only one electron in its outermost shell? **H, Li, Na**
6. What do you notice about the location of the elements in question # 5? **Group 1 - Alkali metals**
7. What do you notice about the number of electrons in the outermost shell as you move from left to right across a row or period in the chart? **Increase**
8. What do you notice about the number of shells each element has as you move from top to bottom of a column or group on the chart? **Increase**
9. Elements are organized into families according to their physical and chemical properties. Write the family names above the correct column on your chart.

Alkali metals have one valence electron

Alkaline Earth metals have 2 valence electrons.

Halogens have 7 valence electrons.

Noble Gases have 8 valence electrons.
10. Using the periodic table and your chart, predict the number of valence electrons for each element based on its location on the periodic table.

	Shells	Valence Electrons
Calcium	4	2
Chlorine	3	7
Barium	6	2

Lead	6	4
Xenon	5	8
Potassium	4	1