

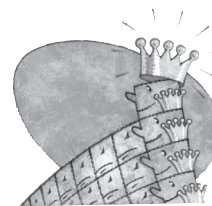
LESSON 19

ACTIVITY

Noble Gas Envy Ions

Name _____

Date _____ Period _____



Purpose

To explore the patterns in ions that form when atoms transfer electrons.

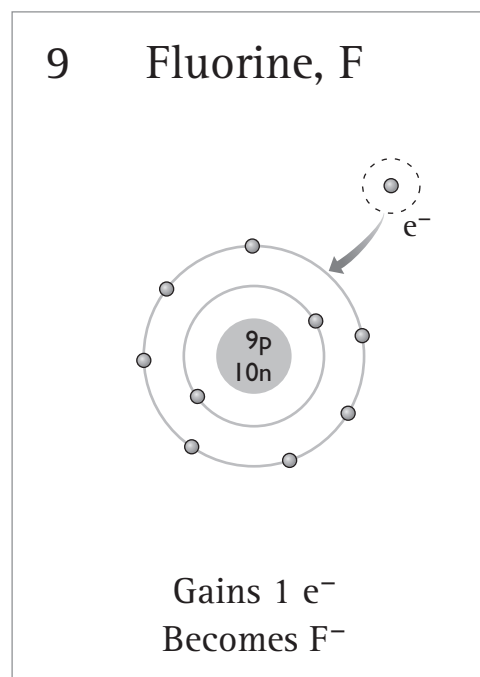
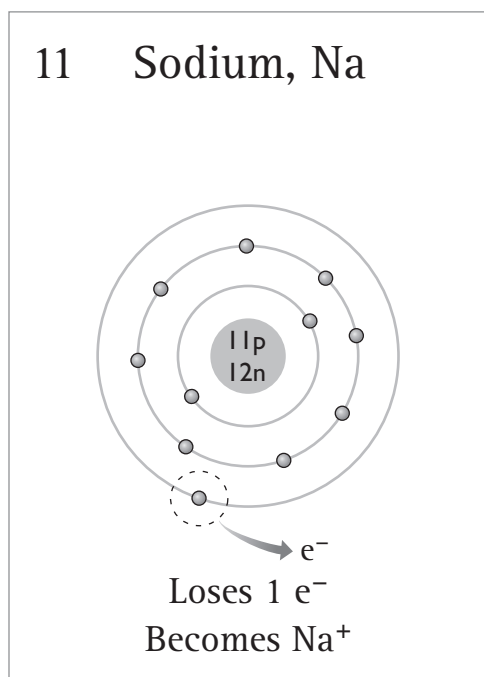
Materials

- 28 index cards

Instructions

Part I: Create a table of ions

- Look at the handout "Lesson 19: Periodic Table of Ions."
- Fill in each box on the chart to look something like the examples shown below.
Note that two similar examples have been shown on the chart.
- In order to determine how to fill out each box, use this information:
Metal atoms tend to lose their valence electrons when forming ions.
Nonmetal atoms tend to gain electrons when forming ions.
The ions formed tend to have a full valence shell.



Part 2: Organize Your Ion Cards

Organize the cards according to the periodic table. (Actually, yours are already arranged, so there's no need to do that.)

Analysis

1. List at least three patterns that you notice in the arranged cards.
2. What happens to the charge on an atom when electrons are removed?
3. What happens to the charge on an atom that gains electrons?
4. Does transferring an electron change the identity of the elements involved? Explain.

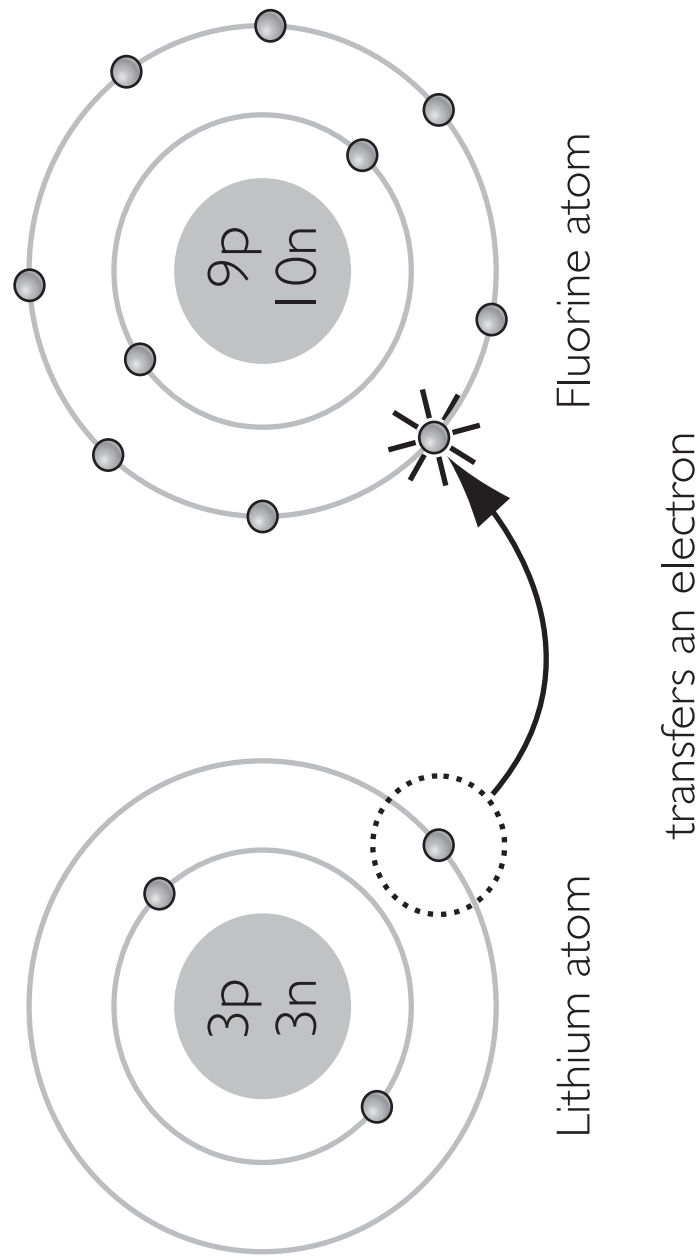
5. Making Sense Why do you think this lesson is titled “Noble Gas Envy”?

- 6. If You Finish Early** Tin, Sn, can lose or gain four electrons.
- a. What is the charge on the tin atom if four electrons have been removed?
 - b. Does tin resemble a noble gas after the four electrons have been removed? Explain.

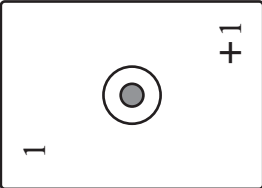
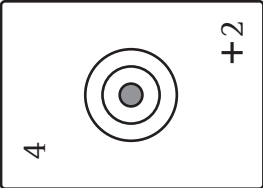
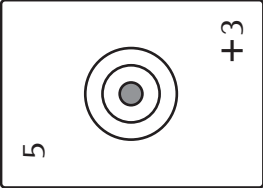
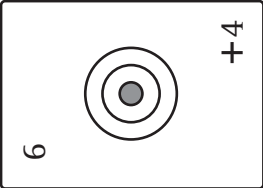
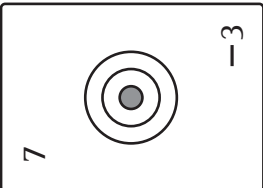
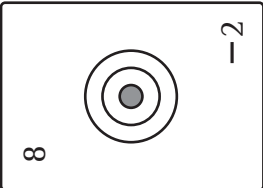
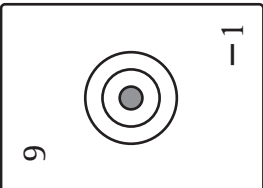
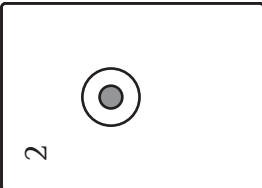
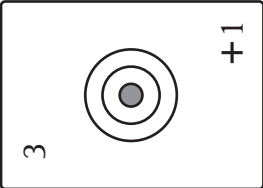
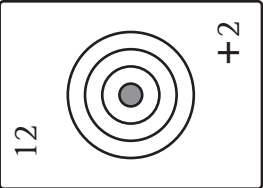
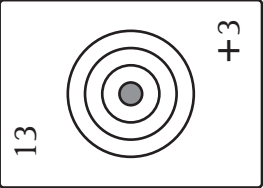
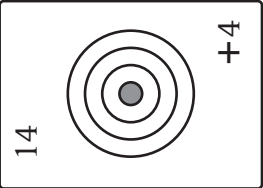
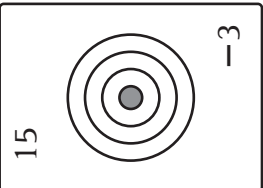
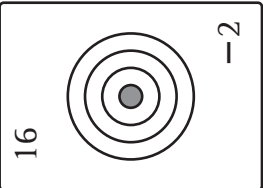
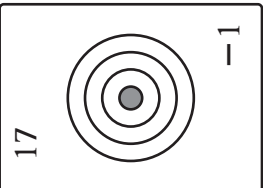
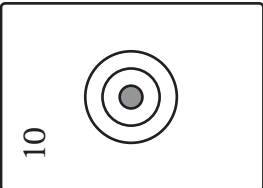
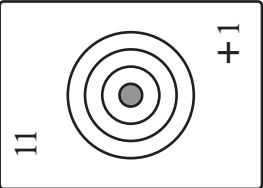
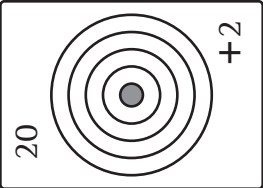
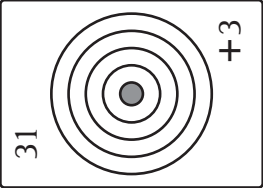
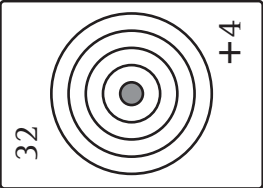
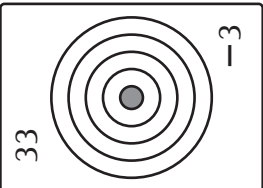
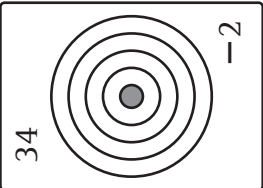
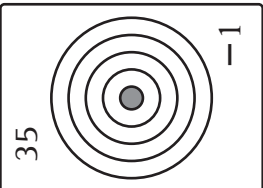
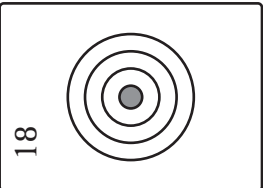
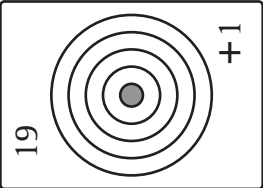
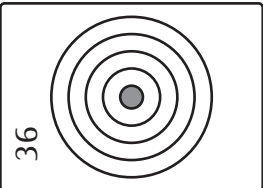
ChemCatalyst

Chemists have found that metal atoms transfer electrons to nonmetal atoms when they form compounds. Examine the shell model showing how a lithium atom might transfer an electron to a fluorine atom.

1. What effect does this electron transfer have on the charge of each atom? Explain.
2. What element does each atom resemble after the electron has been transferred?



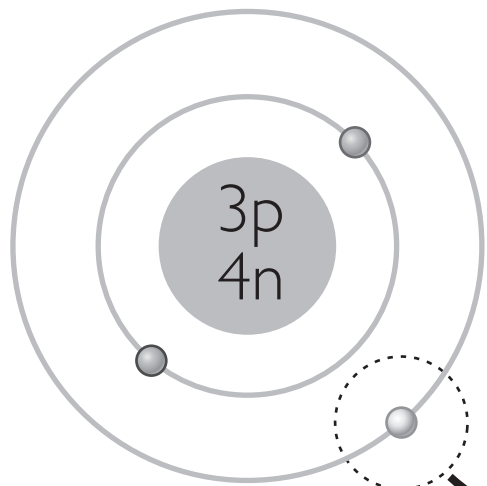
Ion Cards Arranged

Group 1A +1	Group 2A +2	Group 3A (sometimes -4) +3	Group 4A +4	Group 5A -3	Group 6A -2	Group 7A -1	Group 8A 0
1 	4 	5 	6 	7 	8 	9 	2 
3 	12 	13 	14 	15 	16 	17 	10 
11 	20 	31 	32 	33 	34 	35 	18 
19 							36 

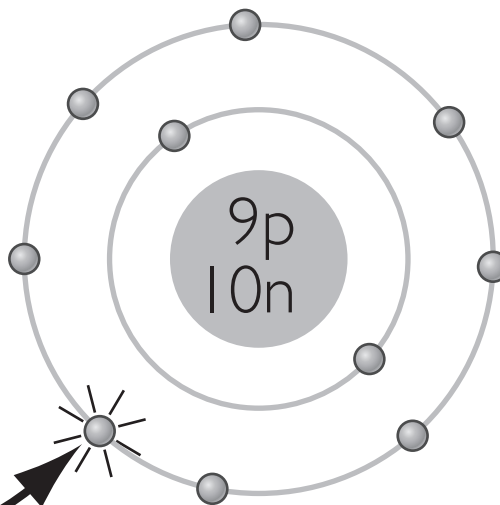
Ion cards arranged

Noble Gas Envy

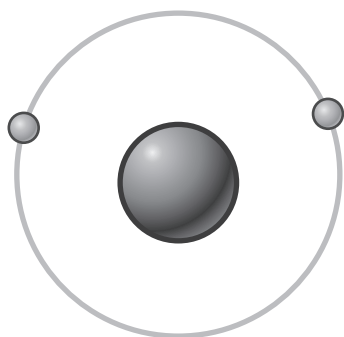
Lithium atom



Fluorine atom



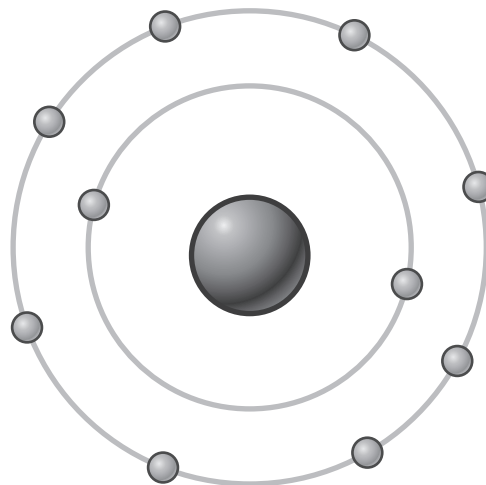
looks
like



Helium atom

combines with

looks
like



Neon atom