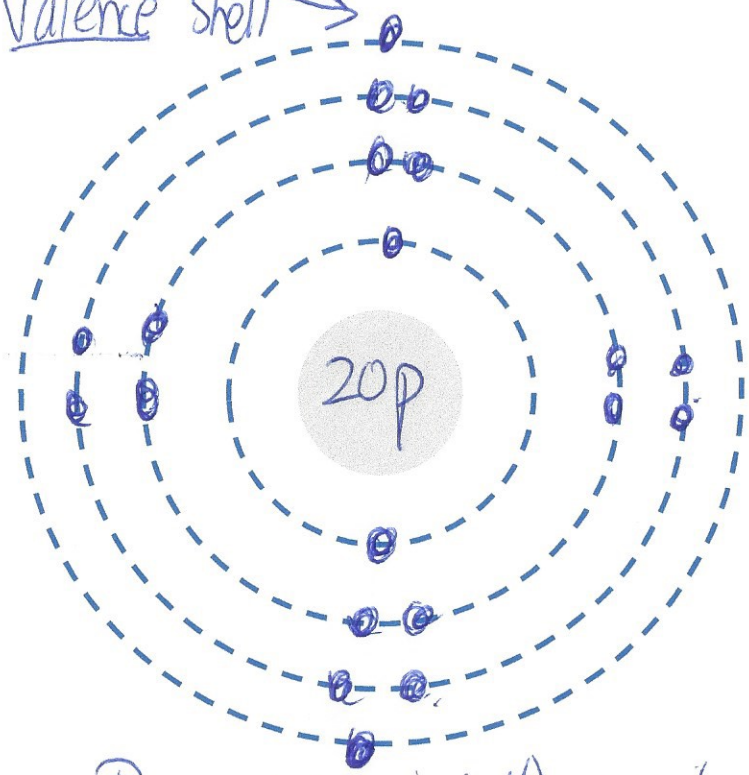
Check-up Ions T, 12/8/15

Get out Lesson 19 and your Periodic Table.
Something to write with.
Something to write on.

Atomic # 20 = 20p
∴ 20 electrons in Group 2A so 2 Valence e-

1. Draw a shell model for calcium, Ca, showing the arrangement of its electrons.
2. Is it a metal or nonmetal?
3. What would have to happen for an atom of calcium to have an electron arrangement like that of a noble gas? Explain.

Valence electrons in Valence shell



Loses its 2 valence electrons and looks like Argon (Ar)

Ca in Row 4 (Period 4) so it has 4 electron Shells (rings)

12/8/15 (T)

(1)

Lesson 20 Notes

How do we determine # valence electrons for a main group element?

How do we determine if an element is a metal or nonmetal?

How do we determine it's most likely charge?

How can we show an element and its ~~ion~~ valence electrons only?

Lewis Dot Structure/Symbol

Ca in Group 2A - 2 valence electrons

valence electron → · Ca ·

↑ symbol

The most dots in a valence shell is 8

Noble Gas valence

12/8/15 (T)

Lesson 20 Notes

Ionic compounds

How can valence electrons be used to predict chemical formulas?

- Atoms combine with other atoms to achieve stability of the Noble Gases.
- Ionic compounds form between a metal and a nonmetal.
- They do this by transferring valence electrons to other atoms.

Octet rule – with the exception of H and He, atoms will gain or lose electrons to have a full valence or 8 e⁻. (Noble Gas Envy.)

Rule of Zero Charge –

Compound	Metal	Cation	Valence	Nonmetal	Anion	# Valence electrons
NaCl	Na	Na^+		Cl	Cl^-	7

Atoms combine to form an ionic compound that has an overall zero charge.

Na^+Cl^- overall – NO CHARGE

12/8/15 #2

Lesson 20 Notes (cont)

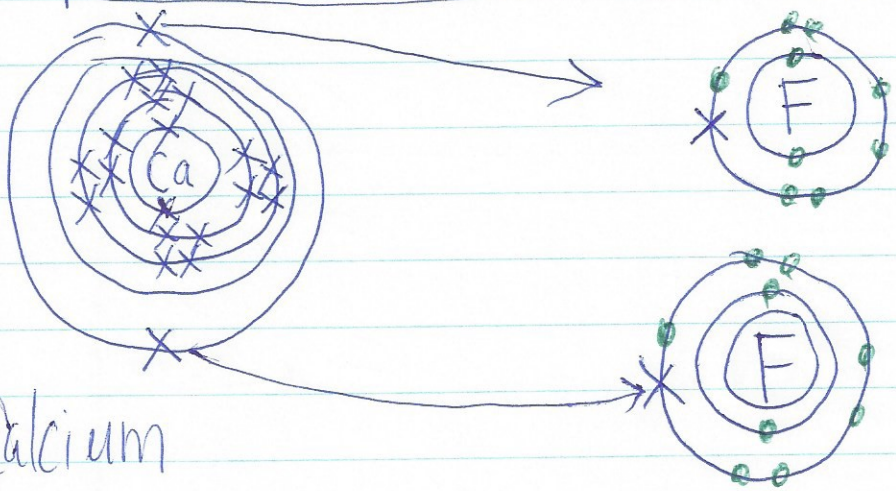
More Complex Ionic Compounds

Metals lose electrons to form cations.

Ca^{2+}

Non-metals gain electrons to form anions.

F^-



1 Calcium

2 Fluorine

$Ca^{2+} + F^- + F^- = CaF_2$ with No Charge

Calcium fluoride

anions drop end of their name and add -ide

Metal is named after the element. Calcium ion

fluoride

12/8/15

#4

TASK - Writing Ionic Formulas with Monoatomic Ions.

1. Cut apart the ion puzzle pieces.
2. There are pieces representing both cations (+) and anions (-).
3. The worksheet will help you practice forming and naming ionic compounds using the Rule of Zero Charge.
4. Complete the first section. Then check your answers.
5. Complete the next section. You will use the P.T. to determine the ion charge then write the formula.
6. Finish the last two sections after doing Lesson 21 - Salty Eights.

H.W. Read pp. 101-105