Purpose:

How do we draw Lewis Dot structures for ions?

WARMUP :

"A neutral molecule of H_2CO has ___12e-___ valence electrons."

(copy and solve)

$$1 + 1 + 4 + 6 = 12\ e^-$$

#1 How to count the valence e- for an ion:

The number of valence e- in NO_3^- is _____
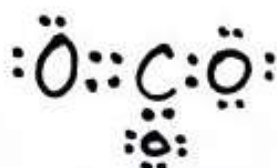
$$5 + 6 + 6 + 6 + 1 = 24e$$

The number of valence e- in $N_2H_6^{2+}$ is ____

$$5+5+1+1+1+1+1+1-2 =$$
$$= fourteen\ e-$$

#2 How to draw the Lewis dot structure of an

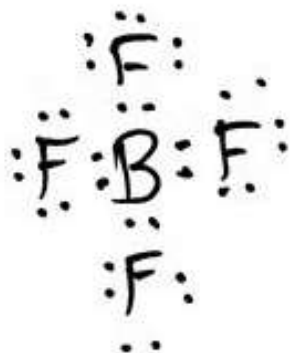ion

Example: Draw the structure of CO_3^{2-}

find valence e^- :
$$4+6+6+6+2 = 24\ e^-$$

$:\ddot{O}::C:\ddot{O}:$
$\ddot{O}:$

Example: Draw the structure of BF_4^+

#3
$$3+7+7+7+7-1 = 30\ e^-$$

$:\ddot{F}:$
$:\ddot{F}:B:\ddot{F}:$
$:\ddot{F}:$

Friday's Test

Covers the last three weeks.
Covers all the 'patterns' sheets.
You are allowed to bring your movie notes sheet IF you don't write a bunch of other stuff on it.
If you were absent, get a blank movie notes sheet and copy the notes from a friend OR watch the movie at genest.weebly.com
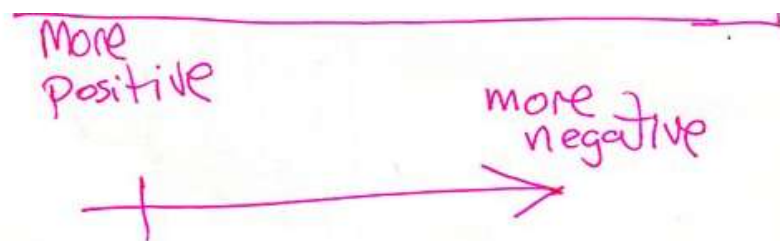
<u>#1 How to count the valence e- for an ion:</u>

The number of valence e- in NO_3^- is

_____

The number of valence e- in $N_2H_6^{2+}$ is

_____

#2 How to draw the Lewis dot structure of an ion

Example: Draw the structure of CO_3^{2-}

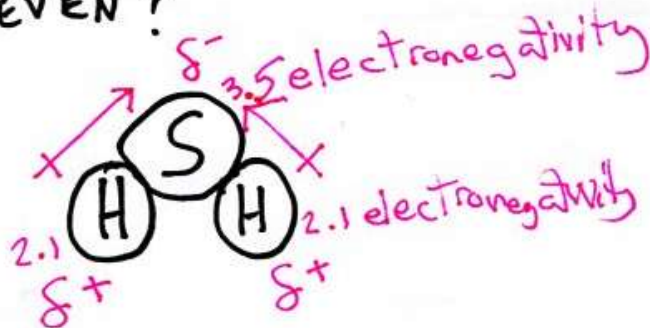# #3 The following two symbols show which end of a bond has more e-:

More Positive

more negative

More Positive

More negative

δ^+

δ^-

#3 HOW DO WE SHOW BONDS WHERE THE e⁻ SHARING IS UNEVEN?

δ^- 3.5 electronegativity

2.1 electronegativity

2.1

δ^+

δ^+

Remember the shortcut for finding valence electrons. (This only works for a neutral atom.):

PERIODIC TABLE
ELEMENTS 1–20

HYDROGEN 1							HELIUM 2
H·							He·

LITHIUM 3	BERRYLLIUM 4	BORON 5	CARBON 6	NITROGEN 7	OXYGEN 8	FLOURINE 9	NEON 10
Li·	Be·	·B·	·C·	·N:	·O:	:F:	:Ne:

SODIUM 11	MAGNESIUM 12	ALUMINUM 13	SILICON 14	PHOSPHORUS 15	SULFUR 16	CHLORINE 17	ARGON 18
Na·	Mg·	·Al·	·Si·	·P:	·S:	:Cl:	:Ar:

POTASSIUM 19	CALCIUM 20
K·	Ca·

homework answers

Predicting Molecular Geometry

CλeMis+ry: http://genest.weebly.com

Stop in for help every day at lunch and Tues,&Thurs after school!!

Name ANSWERS

Period /

1. Next to each, write the name of the geometric shape based on the central atom. You don't have to memorize these names; you will always have your reference table for quizzes and tests.

BENT   TRIGONAL PYRAMIDAL   SQUARE PYRAMIDAL   LINEAR

2. Draw a stable Lewis Dot structure for each molecule AND THEN WRITE the name of the moleculaes geometry, based on the central atom:

NI_3 26 e⁻	OF₂ 20 e⁻
:I:N:I: :I: middle atom has 4 things 1 Lone pair 3 bond pairs	:F:O:F: middle atom has 4 things 2 bonds 2 lone pairs
What's the name of this geometry? TRIGONAL PYRAMIDAL	What's the name of this geometry? BENT
CO_2 16e⁻ :O::C::O:	H_2O 8e⁻ H :O: H
What's the name of this geometry? LINEAR	What's the name of this geometry? BENT

3. Write the electron configuration ($1s^2 2s^2$...) for each atom below
    a. an atom with 15 electrons $1s^2 2s^2 2p^6 3s^2 3p^3$

    b. a neutral iron atom
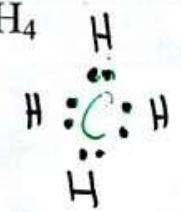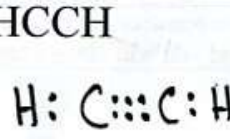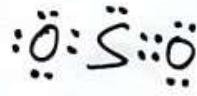 $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^6$
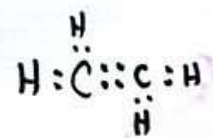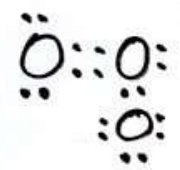
6. What is the smallest element in Period 2?

       Neon

A

7. Which element in Group 2 has the highest electronegativity? fluorine

8. Draw a stable Lewis Dot structure for each molecule:

CH$_4$	HCCH
H H :C: H H What's the name of this geometry? Tetrahedral	H: C:::C: H What's the name of this geometry? Linear
SO$_2$ 6+6+6 = 18e$^-$:Ö: S::Ö What's the name of this geometry? BENT	H$_2$CCH$_2$ H H :C::C: H H What's the name of this geometry? TRIGONAL PLANER

4. Draw a stable Lewis Dot structure for each molecule

N$_2$	O$_3$
:N:::N:	Ö::O: :O:

ANSWERS