

How SHOULD YOU PREPARE FOR...

QUIZ TODAY AT 3:16

**PURPOSE** How DO WE  
DRAW  $\text{NH}_3$  AND  $\text{NH}_4^+$ ?

WARMUP

CALCULATE THE TOTAL  
VALENCE  $e^-$  IN  $\text{NH}_3$

$$5 + 1 + 1 + 1 = 8 \text{ valence } e^-$$



#1 HOW TO DRAW  
CHARGED LEWIS DOTS

$\text{CO}_3^{2-}$  has  $6 + 6 + 6 + 4 + 2 = 24 e^-$

$\text{NH}_4^+$  has  $5 + 1 + 1 + 1 + 1 - 1 = 8 e^-$



#1 A MORE ACCURATE  
VIEW OF A  
N, H BOND:

$\text{CO}_3^{2-}$  HAS 2 extra  
valence  $e^-$

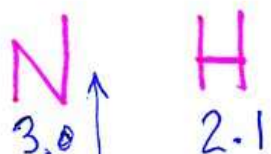
$\text{NH}_4^+$  IS MISSING  
1 VALENCE  
 $e^-$

Draw  $\text{NH}_4^+$  Lewis Structure

It has  $5 + 1 + 1 + 1 + 1 - 1 = 8e^-$



#2 WHERE ARE THE  
 $e^-$  IN A N-H  
BOND?

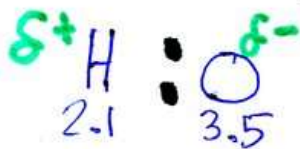


↑  
electrons stay  
closer to  
the N because  
IT HAS greater  
electronegativity  
ON our table



---

BONDS ARE THE  $e^-$  PAIRS  
SHARED BETWEEN  
TWO ATOMS.



electronegativity says  
these bond electrons are

1s<sup>2</sup>2s<sup>2</sup> To Lewis Dot

Chemistry: <http://genest.weebly.com>

The first three pages are all new today. Testable on May 27, but not Quizzable  
May 20<sup>th</sup>! Page 4 is VERY quizzable, however.



Name Core  
Period 4

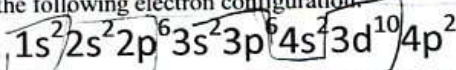
1. Rewrite the following Noble Gas Abbreviations in the longer version of electron configuration (1s<sup>2</sup> 2s<sup>2</sup> etcetera)



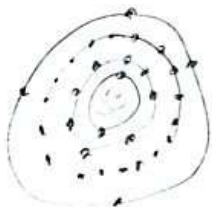
c. Write the Lewis Dot symbol for each of the two atoms above:



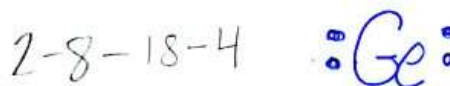
2. for a NEUTRAL atom with the following electron configuration:



Draw a Bohr orbital diagram (the circles)



Write a 'number-number-number' diagram for this atom

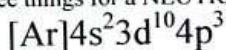


Write a Lewis dot diagram (Letter and dots) for this atom

?

This atom has 4 valence e-  
therefore it is (stable / unstable)

3. Do three things for a NEUTRAL atom with the following electron configuration:



With the help of your table, write the long version of the above electron configuration.



Tell how many e- are in each energy level

1<sup>st</sup>: 2 2<sup>nd</sup>: 8 3<sup>rd</sup>: 18 4<sup>th</sup>: 5 5<sup>th</sup>: 0

This atom has 5 valence e-  
therefore it is (stable / unstable)

Write a Lewis dot diagram (Letter and dots)

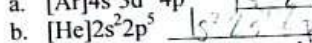
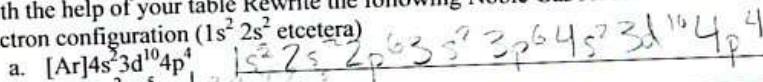
No, there can be more.

4. for a NEUTRAL atom with the following electron configuration:

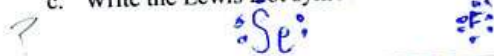
$$1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$$

Write a 'number-number-number' diagram for this atom	Write a Lewis dot diagram (Letter and dots) for this atom	This atom has <u>1</u> valence e- therefore it is (stable / <u>unstable</u> )
2-8-8-1	?	

5. With the help of your table Rewrite the following Noble Gas Abbreviations in the longer version of electron configuration (1s<sup>2</sup> 2s<sup>2</sup> etcetera)



c. Write the Lewis Dot symbol for each of the two atoms above:



6. for a NEUTRAL atom with the following electron configuration:

$$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^3$$

Write a 'number-number-number' diagram for this atom	Write a Lewis dot diagram (Letter and dots) for this atom	This atom has <u>6</u> valence e- therefore it is (stable / <u>unstable</u> )
2-8-18-18-6	$\cdot\cdot\text{Sb}\cdot\cdot$	

7. for a NEUTRAL atom with the following electron configuration:

$$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^5$$

Write a 'number-number-number' diagram for this atom	Write a Lewis dot diagram (Letter and dots) for this atom	This atom has <u>2</u> valence e- therefore it is (stable / <u>unstable</u> ) How do we know which element it is?
2-8-13-2	$\cdot\cdot\text{Mn}\cdot\cdot$	

8. for a NEUTRAL atom with the following electron configuration:

$$[\text{Ar}]4s^2 3d^2$$

Write a 'number-number-number' diagram for this atom	Write a Lewis dot diagram (Letter and dots) for this atom	This atom has <u>2</u> valence e- therefore it is (stable / <u>unstable</u> )
2-8-14-2	$\cdot\cdot\text{Fe}$	

9. for a NEUTRAL atom with the following electron configuration:



Tell how many e- are in each energy level

1<sup>st</sup>: 2 2<sup>nd</sup>: 8 3<sup>rd</sup>: 6 4<sup>th</sup>: 0 5<sup>th</sup>: 0

This atom has 6 valence e- therefore it is (stable / unstable)

Write a Lewis dot diagram (Letter and dots) ?



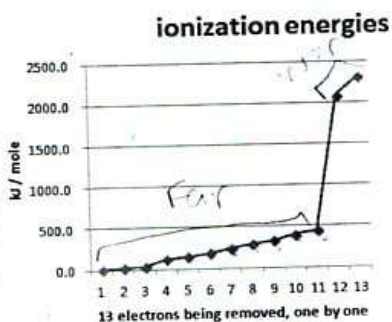
10. In each box, use your table from Wednesday (or online at our website) to write the name of the shape.

<p>tetrahedral</p>	<p>trigonal pyramidal</p>	<p>The carbon on the left...</p> <p>linear</p>
<p>octahedral</p>	<p>trigonal pyramidal</p>	<p>bent</p>

10. The graph of ionization energies for a 13-electron atom is shown here. Based on the difficulty of ionization, electrons 1, 2, & 3 are probably (near the nucleus / in the valence orbit)

11. Based on the difficulty of ionization, electrons 12 & 13 are probably (near the nucleus / in the valence orbit)

12. In the box, draw a Bohr style atom. Your atom should have 13 protons. The electrons should be in three circular shaped orbits.



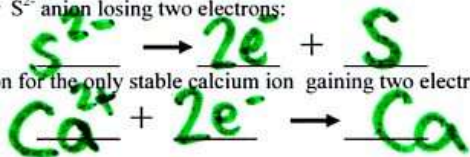
Draw a Number-Number-Number symbol for this atom in this box.

~~2-8-5~~  
2-8-3

Write the Lewis dot diagram here:







13. Write a balanced equation for  $S^{2-}$  anion losing two electrons:



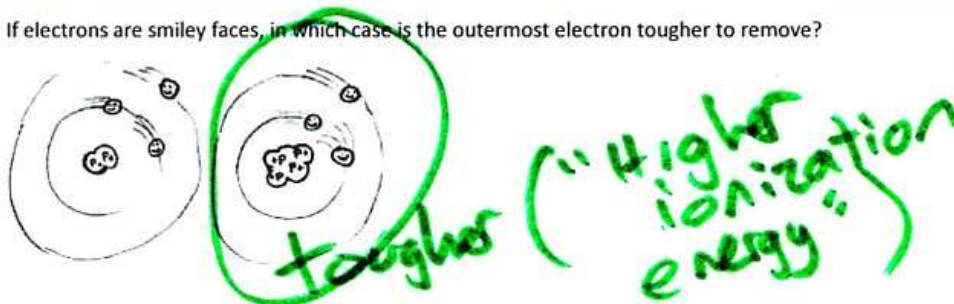
14. Write a balanced equation for the only stable calcium ion gaining two electrons:



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


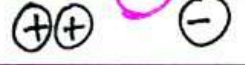


H <sub>2</sub> S		N <sub>2</sub>	
HCl		F <sub>2</sub>	

1. If electrons are smiley faces, in which case is the outermost electron tougher to remove?



1. In each pair, circle the pair that has a greater attraction.

- a) an electron and proton that are 2 nanometers apart or an electron and proton that are 3 nanometers apart
- b) an electron and the nucleus of nitrogen or an electron and the nucleus of oxygen

1. In which situation below will attraction be stronger? ( A / B / no difference )	2. In which situation below will attraction be stronger? ( A / B / no difference )
a) 	a) 
b) 	b) 

1.