

Directions: In your groups, read through and come to a consensus choice for what you feel is the correct answer for the following questions.

1. Based on periodic trends, \_\_\_\_\_ is the most electronegative. Cl O F N Br

Why? \_\_\_\_\_

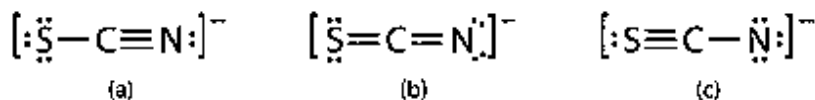
2. Based on periodic trends, \_\_\_\_\_ is the least electronegative. Cl Rb Si Ca F

Why? \_\_\_\_\_

3. Draw the Lewis structure of  $\text{ICl}_2^+$  and indicate the formal charge for each atom.

4. What is the formal charge on the carbon in Carbon Dioxide

5. Using formal charges, which of the following structure is the most stable form of the thiocyanate ion? Explain your reasoning.



\_\_\_\_\_

\_\_\_\_\_

6. Using the structural formula and formal charge, which of the following ions is most stable Lewis structure? Discuss amongst your group the criteria for evaluating the most stable Lewis structure and write it down in your own words:

\_\_\_\_\_

\_\_\_\_\_

$\text{OCN}^-$	$\text{ONC}^-$	$\text{NOC}^-$

7. Discuss amongst your group what characteristics of molecules indicate the presence of resonance. Write down the conclusion in your own words.

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8. Base on the Lewis structures, which of the following molecules would you expect to exhibit resonance?

- A) CH<sub>4</sub>      B) OF<sub>2</sub>      C) O<sub>2</sub>      D) NO<sub>2</sub><sup>-</sup>

9. Use the bond energies provided to estimate  $\Delta H^{\circ}_{\text{rxn}}$  for the reaction below.



Bond	Bond Energy (kJ/mol)
C-H	414
C-O	360
C=O	799
O=O	498
O-H	464

$$\Delta H^{\circ}_{\text{rxn}} = \underline{\hspace{2cm}}$$