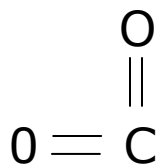
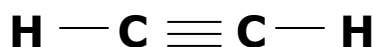


1 **Is this drawn correctly? Why or why not?**



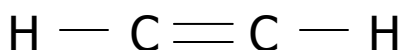
Is this drawn correctly? Why or why not?



2 Element Z has 21 electrons. Draw its Lewis dot diagram.

Draw electron dot diagram for Au^{+3}

Is this drawn correctly? Why or why not?



3 Match up the compound to the bond type you can use the bonds more than once, or not at all.

| | |
|-----------------------|-----------------------------|
| H_2 | 1. ionic |
| HF | 2. single polar covalent |
| CO | 3. non polar covalent |
| CS_2 | 4. coordinate covalent |
| MgCl_2 | 5. double nonpolar covalent |
| Li_3P | 6. double polar covalent |
| NaCl | 7. double ionic |
| O_2 | |

1. No, CO_2 is a straight line molecule and has radial symmetry, so it's non polar. It's not bent, the electrons all push away from each other.

Yes, the C_2H_2 can only go together with a triple non polar covalent bond between the two carbon atoms, with the outer valence electrons each combining with hydrogen.

2. $21e^{-1}$ means 2-8-8-1, so draw this one as Z^\bullet then



Is this drawn correctly? Why or why not?

C_2H_2 is wrong here, the C to C bond must be triple non polar covalent to satisfy the octet rule. A double bond here gives each carbon just $6e^{-1}$

3

Match up the compound to the bond type...

- H_2 —Single nonpolar covalent
- HF —Single polar covalent
- CO —Coordinate covalent
- CS_2 —Double nonpolar covalent
- MgCl_2 —Ionic
- Li_3P —Ionic
- NaCl —Ionic
- O_2 —Double non polar covalent

- 4 Element X has 6 electrons. Draw its Lewis dot diagram.
Element Y has 16 electrons. Draw its Lewis dot diagram.
Describe all the bonds in the compound strontium sulfate.

- 5 Draw the dot diagrams for... Li_3PO_4 , C_2H_2 , and AlP

What are the relative oxidation numbers for... H_2SO_4 and PCl_3

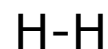
Match up the electrons with their bonding types:

- | | |
|--------------------------|---------------------------------|
| <i>1. ionic bonds</i> | <i>A. mobile electrons</i> |
| <i>2. metallic bonds</i> | <i>B. transferred electrons</i> |
| <i>3. covalent bonds</i> | <i>C. shared electrons</i> |

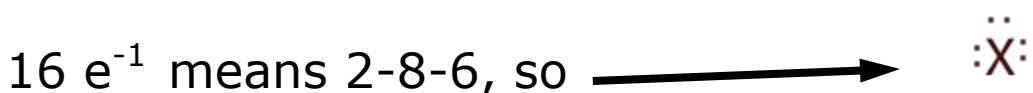
- 6 Rank these bonds from most polar to least polar...

NH_3 , HF , NaCl , CS_2

Which are drawn correctly?



4. six electrons means 2-4, so :X:

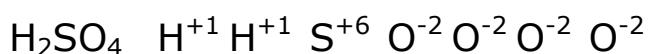


strontium sulfate has ionic bonds plus polar covalent bonds between sulfur and oxygen.

5. Dot Diagrams for Li₃PO₄, C₂H₂, and AlP



The relative oxidation numbers for...



Ionic bonds have transferred electrons, metallic bonds have loose valence (mobile) electrons, while covalent bonds share electrons

| | NH ₃ | HF | NaCl | CS ₂ |
|--------------------------|-----------------|------------|------------|-----------------|
| electronegativity values | 3.0 & 2.1 | 2.1 & 4.0 | 0.9 & 3.2 | 2.6 & 2.6 |
| EN difference | 0.9 | 1.9 | 2.3 | zero |
| rank | polar | very polar | most polar | non polar |

Which are drawn correctly? [Li]⁺¹(yes) [Ca]⁺¹(no, +2) H-H (yes)

- 7 Draw the electron dot diagrams for...
 PCl_3 , C_2H_4 , and OCl_2

Describe all the bonds in strontium sulfide.

Which has the highest boiling point?
 HCl , HBr , or HI ? How do you know?

- 8 *What are the relative oxidation numbers for PCl_5 and MgSO_4*

Which are drawn correctly? Mg-F Sr: $\text{Mg}::\text{Mg}$

Which molecules are polar or non polar?

CBr_3F , SO_2 , N_2 , C_2H_2

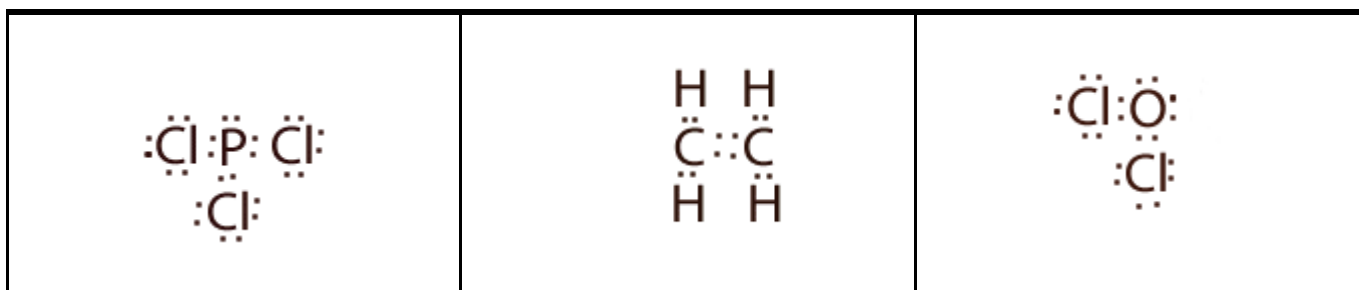
- 9 Which molecules are polar or non polar?

HCl , CCl_4 , H_2O , F_2

Rank these bonds from most polar to least polar

N_2O_5 , HCl , CO , PCl_3

7. Draw the electron dot diagrams for... PCl_3 , C_2H_4 , and OCl_2



Describe all the bonds in strontium sulfide: Just ionic here.

Which has the highest boiling point? HCl , HBr , or HI ? Why?

Look at the differences in electronegativity, the one with the greatest difference is the most polar, which means it will stick together the strongest (intermolecularly), so it will require the most energy to break it apart. HCl has the greatest difference in EN value, so it has the MOST POLAR bonds, and the greatest self attraction.

8. relative oxidation numbers for PCl_5 each Cl is -1 , P is $+5$

in MgSO_4 Oxygen 4×-2 , Mg is $+2$, so sulfur has is $+6$

Which are drawn correctly? Only the Sr atom is correct.

Which are polar or non-polar?

CBr_3F (polar), SO_2 (polar), N_2 (nonpolar), C_2H_2 (nonpolar)

9. Which molecules are polar or non polar? HCl , CCl_4 , H_2O , F_2

In order they are... polar, nonpolar, polar, nonpolar

Rank these bonds from most polar to least polar...

Most polar to least polar in order are HCl , PCl_3 , CO , NO