CONCEPT: LEWIS DOT STRUCTURES: SIGMA AND PI BONDS

- Recall, a single covalent bond involves the sharing of ____ valence electrons between elements.
  - □ **Sigma Bond** (____ bond): The strongest form of a covalent bond that directly connects elements together.
  - □ **Pi Bond** (____ bond): The weaker form of a covalent bond that insulates and protects the sigma bond.
  - □ As the number of pi bonds ____ between elements the bond strength _____ and the bond length _____.

Sigma & Pi Bonds

Single Bond	Double Bond	Triple Bond
A single bond has ___ s bond and ___ p bond.	A double bond has ___ s bond and ___ p bond.	A triple bond has ___ s bond and ___ p bond.
C—C	C=C	C≡C

EXAMPLE: Which of the following statements best describes the relationship between bond length and bond strength for a series of compounds involving bonds between the same two atoms?

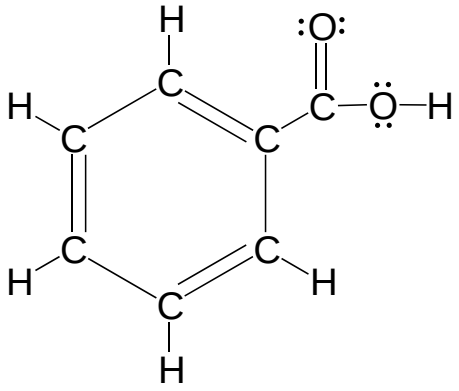
a) The greater the bond strength, the longer the bond.

b) The greater the bond strength, the shorter the bond.

c) Bond length and bond strength are not related.

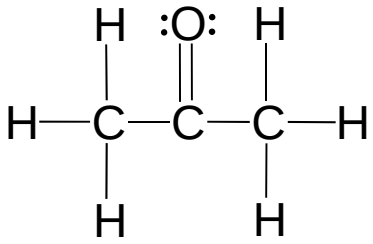
d) The relationship between bond length and bond strength depends on other factors.

PRACTICE: How many pi bonds does the following molecule contain?



CONCEPT: LEWIS DOT STRUCTURES: SIGMA AND PI BONDS

PRACTICE: How many sigma bonds does the following molecule contain?



PRACTICE: Which has greater bond strength between the carbon–carbon bond.

C_2Cl_2 vs. C_2Cl_6

PRACTICE: Draw the total number of sigma and pi bonds of the sulfur trioxide molecule, SO_3.