

Multiple Covalent Bonds

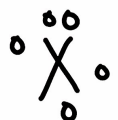
1A(1)

1 val^{e-}

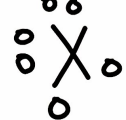
4A(14)

4 val^{e-}

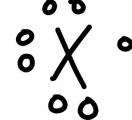
5A(15)

5 val^{e-}

6A(16)

6 val^{e-}

7A(17)

7 val^{e-}

Each single dot can form a single bond

Form mult. bonds

1 single bond	4 single, 2 double	1 double + 1 single	1 double or 2 single	1 single bond
	1 triple + 1 single	1 triple		



Single Bond : Sharing of 2 (pair) of e⁻

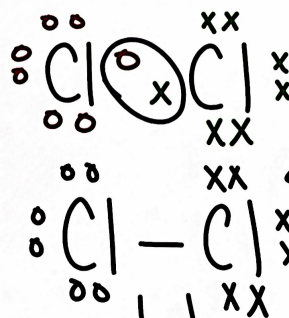
From 2 atoms

H₂ (diatomic Hydrogen)



↑
single covalent bond
(share)

Cl₂ (diatomic chlorine)



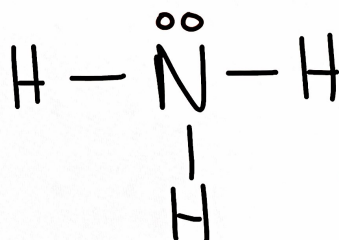
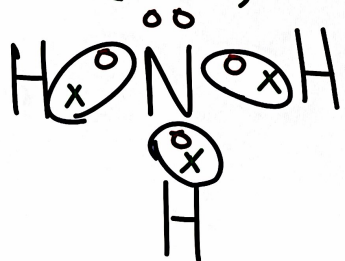
8 val^{e-}
total
(7 + 1)

2 val^{e-}



Single Bond : Sharing of 2 (pair) of e^-
From 2 atoms

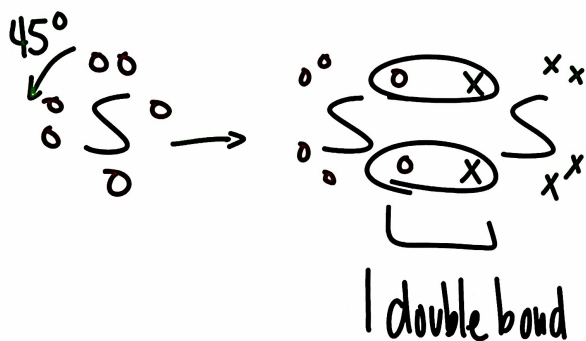
NH_3 (ammonia, nitrogen trihydride)
(central)



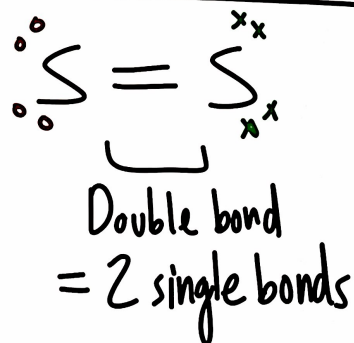
3 single bonds

Double Bond - Sharing of 4 val. e^- between two atoms

Sulfur (S_2)



Double is 2x stronger
than single

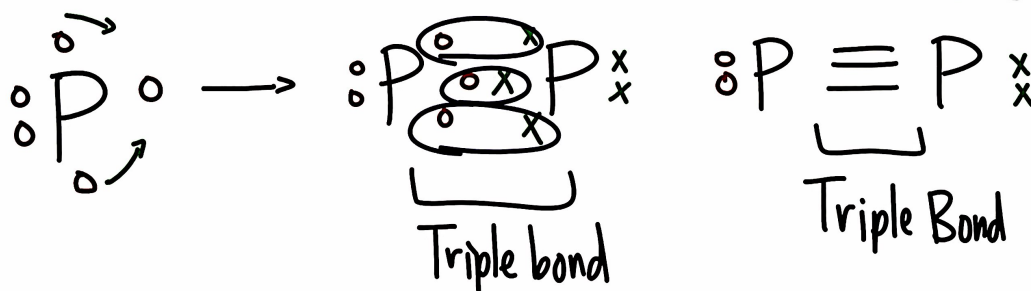


Triple Bond - Sharing of 6 val. e^- between two atoms

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P_2 (Phosphorous)

Triple is 3.x stronger than single



Carbon (up to 4 single bonds)

$\begin{array}{l} \text{2 double} \\ \text{1 triple + 1 single} \\ \text{1 double + 2 single} \end{array}$

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CH_4 (methane)

H_2CS

