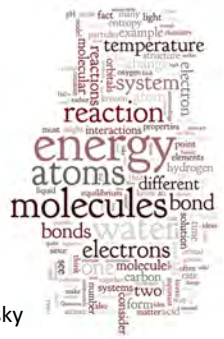
Drawing Lewis Structures



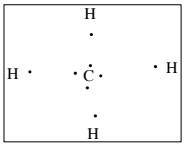
Chemistry, Life, the Universe & Everything – Cooper & Klymkowsky

Drawing Lewis Structures (intuitively)

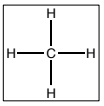
(this works for most compounds using H or second row elements)

- Things you need to know:
  - How many valence electrons each atom has
    - H = 1, B = 3, C = 4, N = 5, O = 6, F = 7.
  - How many bonds the atom **normally** forms (the valence)
    - H = 1, B = 3, C = 4, N = 3, O = 2, F = 1. (note that the # bonds + # valence electrons usually = 8)

Write out the atoms in the order you think they are connected eg CH4

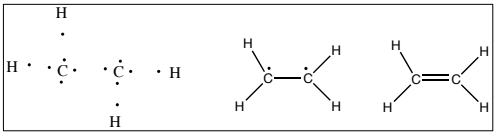


Attach the atoms using 2 electrons for each bond



Leftover electrons are lone pairs

Not enough electrons? Form Mulitiple bonds!



Drawing Lewis Structures (rules)- these will work for anything – but its hard to see how the bonds form

1. Write the skeleton structure (this is the hard part – it takes practice, the way the structure is written may give you a clue
2. Calculate total valence electrons for + ions remove electrons, and – ions add electrons
3. Use 2 electrons for each bond.
4. Make sure each atom (except H) has 8 electrons by adding lone pairs
5. If there are not enough electrons form multiple bonds.