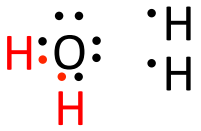
VIDEO SUMMARIES: STRUCTURE

LEWIS DIAGRAMS

What you need to know:

- Draw number of valence electrons around an atom
- Atoms share electrons to complete outer (valence) shells

E.g H_2O



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MOLECULAR SHAPE

What you need to know:

Number of different electron pairs

Number of bonds

	1	2	3	4
4	Bromine 109.5° Br−Br Linear	Water 109.5° Bent	Phosphine 109.5° Trigonal Pyramidal	Methane 109.5° Tetrahedral
3	Oxygen 120° O=O Linear	Nitroxyl 120° Bent	Formaldehyde 120° Trigonal Planar	
2	Nitrogen 180° N≡N Linear	Carbon Dioxide 180° O=C=O Linear		

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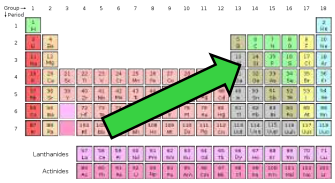
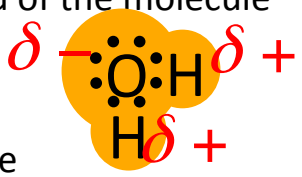
POLARITY

What you need to know:



- Electronegativity is an atoms ability to attract negative charge (electrons)
- Polar molecules are where the electron cloud spends a greater amount of time at one end of the molecule



- Non polar molecules are where the electron cloud is evenly shared between atoms in a bond

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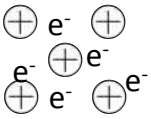
TYPES OF BONDING

What you need to know:

Metallic – Between metals

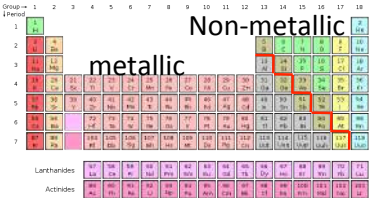


Positive ions in a sea of negative electrons

Type of particle: Atoms

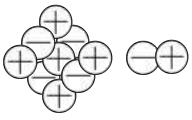
Covalent – non metals

Electrons are shared in bond



Type of particle: Network/Molecules

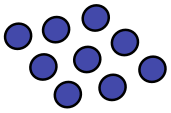
Ionic – Between metal and non metal



Positive and negative ions are attracted to each other

Type of particle: Lattice/Ions

Inter-molecular



Between particles

Type of particle: Molecular

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PROPERTIES OF BONDS

What you need to know:

	Hardness	Malleability	Ductility	Solubility	Conductivity
Metalic	Low	Yes	Yes	No	Yes
Covalent	High	No	No	No	No
Ionic	Medium	No	No	Yes	Molten

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HEAT OF REACTION

What you need to know:

- Exothermic: a reaction that gives out heat
  - Breaking bonds
- Endothermic: a reaction that requires heat
  - Making bonds

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VIDEO SUMMARIES: STRUCTURE

STOICHIOMETRY

What you need to know:

- Stoichiometry: the relationships between the different amounts o f substances within a reaction
- $n = \frac{m}{M}$

  n - Number of moles (mol)
  m - mass (g)
  M - molar mass ($gmol^{-1}$)
- Can calculate the relevant proportion of $\Delta_r H$ (heat of reaction)

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