

Rolling Through Reactions: Review Sheet

Cracking

By-products of the fractional distillation process have many long chain alkane residues that have limited commercial value. Converting these alkanes into shorter chain alkanes or alkenes creates a valuable commercial product. This conversion is possible through a process called cracking. Cracking can be done using high temperatures or a catalyst such as aluminum oxide. Cracking is the most important process for the commercial production of gasoline.

Cracking = Breaking down large hydrocarbons into smaller ones



Reforming

Used to create larger hydrocarbon molecules from smaller ones, reforming is the rearrangement of the molecular structure of a hydrocarbon to alter its properties. Reforming is usually used on low-quality gasoline stocks to improve their combustion characteristics.

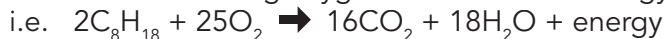
Reforming = Creating large hydrocarbons from smaller ones



Combustion

Combustion is a rapid chemical reaction between substances that produces carbon dioxide, water, and energy in the form of heat and/or light.

Combustion = Using oxygen to release the energy stored in hydrocarbons



Substitution

A substitution reaction is a general type of organic reaction where a hydrocarbon containing one functional group or substituent in the reactant molecule is replaced by another. Substitutions usually involve oxygen, nitrogen or halogens, such as chlorine.

Substitution = A reaction that alkanes undergo in the presence of halogens

