

Chemical Reactions - chemical change

- Evidence of a reaction

- (1) permanent color change
- (2) permanent odor change
- (3) gas bubbles form
- (4) a solid forming from liquid (precipitation)
- (5) H_2O forms
- (6) change in energy (temperature)

- Terms

- (1) reactants - starting substances in a reaction
- (2) products - substances formed in a reaction
- (3) \rightarrow
 - yields (produces), separates reactants from products
- (4) +
 - and, separates (products) from each other
- (5) (s)
 - solid
- (6) (l)
 - liquid
- (7) (g)
 - gas
- (8) (aq)
 - aqueous, dissolved in water (solution)

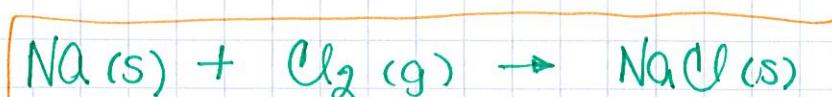
7 diatomic elements - elements that always appear as 2 atoms bonded together



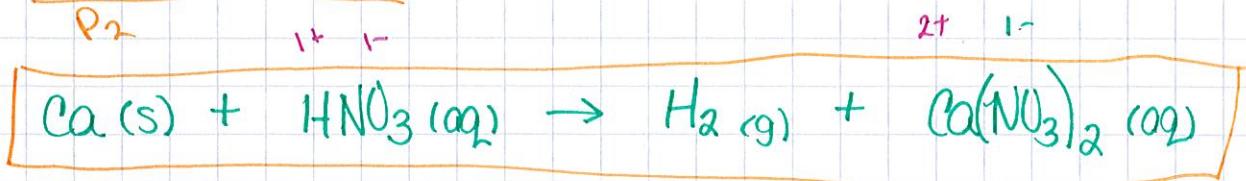
Represent a Chemical Reactions

- Skeleton Equations

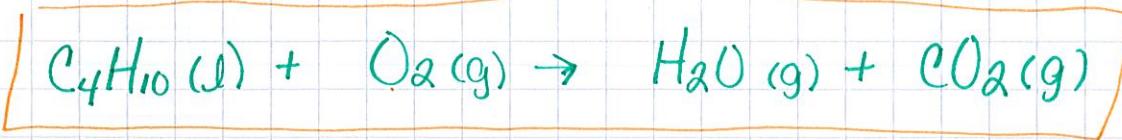
Ex) $\text{R}_1 + \text{R}_2 \rightarrow$
Sodium metals react with chlorine gas to produce sodium chloride crystals.



Ex) Solid calcium reacts with a solution of nitric acid to produce hydrogen gas and a solution of calcium nitrate.



Ex) Liquid butane (tetracarbon decahydride) is burned in oxygen gas to produce water vapor and carbon dioxide gas.



Ex) Solid potassium chlorate decomposes to produce solid potassium chloride and oxygen gas.



Ex.) A precipitate of barium sulfate and water are produced when solid barium hydroxide reacts with a solution of sulfuric acid.

