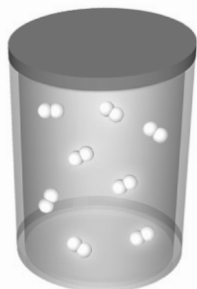


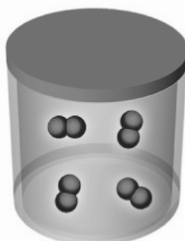
# Avogadro's Law, Volume Ratios, and Balance Coefficients

## Avogadro's Law

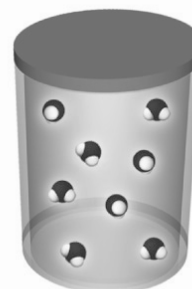
Equal volumes of all ideal gases at the same temperature and pressure contain the same number of molecules.



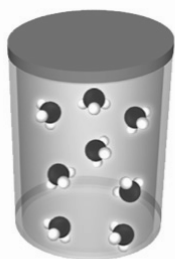
hydrogen gas  
 $2 \text{H}_2(\text{g})$   
 2 mol  
 2 volumes



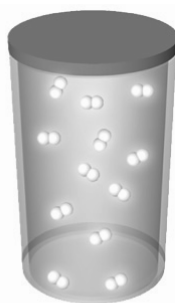
oxygen gas  
 $1 \text{O}_2(\text{g})$   
 1 mol  
 1 volume



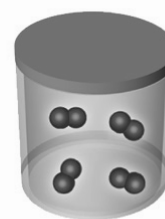
water vapour  
 $2 \text{H}_2\text{O}(\text{g})$   
 2 mol  
 2 volumes



ammonia gas  
 $2 \text{NH}_3(\text{g})$   
 2 mol  
 2 volumes



hydrogen gas  
 $3 \text{H}_2(\text{g})$   
 3 mol  
 3 volumes



nitrogen gas  
 $1 \text{N}_2(\text{g})$   
 1 mol  
 1 volume

When gases combine, the ratio of their volumes is the same as the ratio of the coefficients of the balanced equation.