Rate of Alveolar Ventilation
Total volume of new air entering the alveoli each minute (4200ml/min)

Dead Space
Those areas of respiratory tract where gases are present but do not take part in gas exchange. (150ml young adults and increase with age)

Anatomical Dead Space
The volume of all spaces of respiratory system besides the gas exchange areas

Physiological Dead Space
Sometimes some areas of alveoli are nonfunctional. When alveolar dead space is included in the total measurement of dead space this is then called physiological dead space

Composition of Air Inspired
Inspired Air: Assume breathing dry air: mixture of Oxygen (21%) and Nitrogen (79%); if air not dry, variable amount of water vapor, depending on relative humidity and temperature
Tracheal Air: Inspired air is saturated with water as it passes along the moist airways. Water content depends on temperature; at core (deep) body temperature of 37C. As a result of addition of water, O2 and N2 are diluted.
Alveolar Air: Inspired air is split; some enters the alveoli and some remains in the airways (anatomical dead space)

Composition of Alveolar Air
O2 decrease, due to oxygen uptake
CO2 increase, due to carbon dioxide production
O2 decrease and CO2 increase depends on metabolic rate versus alveolar ventilation

Expired Air
Mixture of Alveolar Air and Tracheal Air that remained in the Dead Space
Exhaled air has high level of CO2 and water vapor while inhaled air has O2 and very little amount or no water vapor.