1. Why is it necessary to correct the readings of the respirometers containing seeds with the readings taken from respirometers containing only glass beads? Your answer should refer to the concepts derived from the general gas law:PV = nRT Where P = pressure of the gas V = volume of the gas n = number of moles of the gas R = the gas constant (its value is fixed)T = temperature of the gas.

   It is necessary to correct readings based off the respirometer containing only glass beads because atmospheric temperature and pressure can change, even after he equilibration period. If the outside atmospheric pressure were to increase and everything else remained constant, V=(nRT)/P. This equation means that the measured volume of consumed O2 would decrease when compared to the actual volume of consumed O2 because the denominator P is becoming greater. If the temperature increased, V=(nRT)/P holds true again. This equation means that the volume of consumed O2 measured would be greater when compared to the actual volume of consumed O2 because the numerator would be greater after multiplying the higher temperature by n and R. For both of these case the opposite could also be the case, with a pressure decrease, an increase in measured volume of consumed O2 when compared to the actual volume of consumed O2 and with a temperature decrease a decrease in measured volume of consumed O2 when compared to the actual volume of consumed O2. To correct these changes in atmospheric conditions, a control respirator will be used containing only glass beads. Form this respirator the other readings can be corrected.

2. What happens to the volume of the gas being measured (O2 consumption or CO2 production) when the temperature or pressure changes during the experiment?If pressure and temperature remain constant, will the volume of gas in the respirometers increase or decrease? Please explain.Hint: Several tutorials and animations explaining the general gas law are available online (e.g., http://www.nclark.net/GasLaws).

   When atmospheric temperature and pressure change the O2 consumed, what will be measure in this experiment, will change corresponding to V=(nRT)/P as indicated in the table below:

atmospheric condition:	pressure increase	pressure decrease	temperature increase	temperature decrease
result on measure volume of O2 consumed when compared to actual volume of consumed O2:	decrease	increase	increase	decrease

   However if the atmospheric temperature and pressure remain constant, the volume of consumed O2 will not change due to atmospheric conditions. The volume of consumed O2 will still decrease as the experiment is being conducted as the germinating seeds use O2. That consumption is what this experiment is designed to test for.