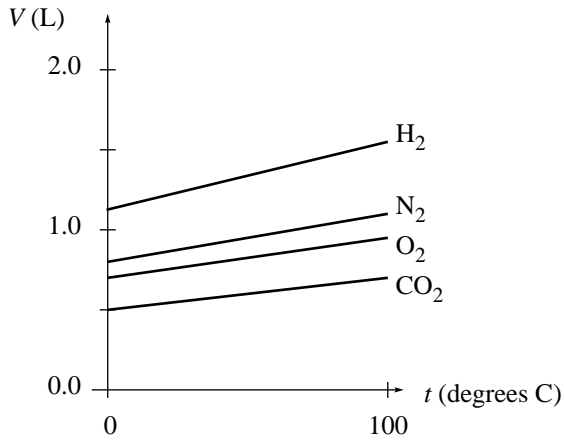
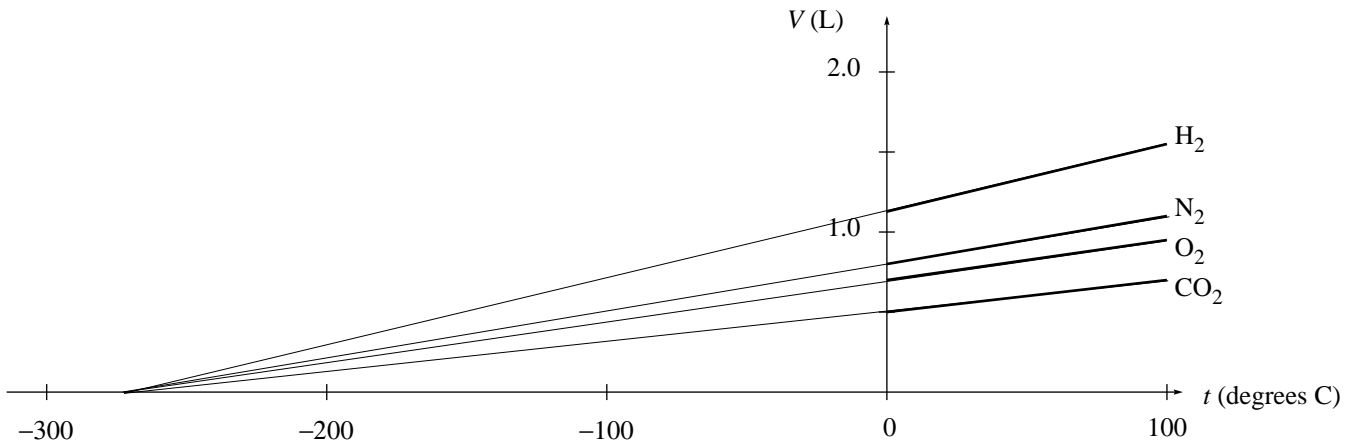


Volume of Gas used as a Thermometer

Gas expands upon temperature increase, so the volume of a sample of gas can be used as a thermometer. For example, at atmospheric pressure one gram of CO_2 , or O_2 , or N_2 , or one-tenth gram of H_2 , has the volume shown below.



In 1779, Johann Lambert (building on 1699 work by Guillaume Amontons) had the bright idea to extend these lines to lower temperatures. Lambert found that all the volumes were zero at the same temperature, namely -273 degrees C.



Today, we call this zero-volume temperature "absolute zero" and recognize it as the lowest possible temperature. However in Lambert's day this wasn't clear: After all, these substances are all solids at a temperature of -273 degrees C, so we don't expect the gas law to have any validity or special significance.

