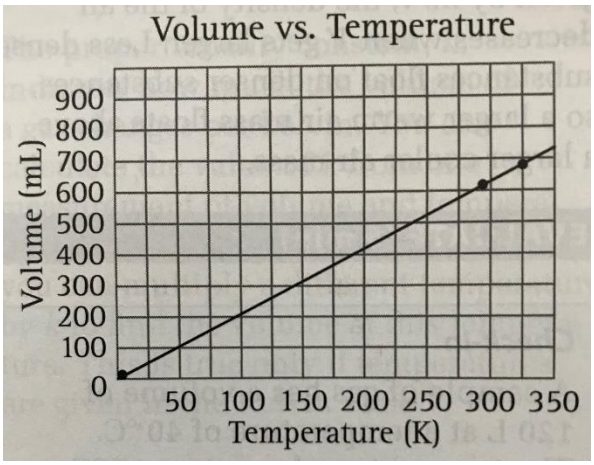
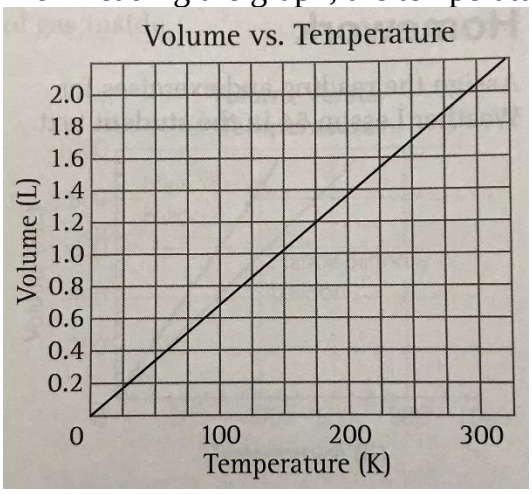
Lesson 54 Homework (page 286, #1-8)

1. Determine the proportionality constant, k, for a gas by dividing the volume of the gas by its temperature measured on the Kelvin temperature scale.
2. Determine the volume of a gas by multiplying the proportionality constant, k, and the temperature of the gas measured on the Kelvin temperature scale. The solution assumes constant pressure and that a specific mass of gas was sued in determining the proportionality constant.
3. 689 mL



4. 1062 mL
5. 186 K
6. Possible answers:
   - Calculate the proportionality constant using k = V/T and then use it to calculate the new temperature, T = V/k = 147 K.
   - Make a graph using the proportionality constant. Find the value that corresponds to 1 L by reading right from 1 L to the graph and down to the temperature in degrees Kelvin. From reading the graph, the temperature should be cooled to about 145 K.



7. A. 83.3 L/K
   B. 24,6000 L
   C. 83.3 L/K
   The proportionality constant for a particular gas does not change as the temperature changes as long as the amount of gas is the same.
8. Possible answer: The cup would not make a good rain gauge because the sides of the cup slop inward from the top to bottom so no proportionality constant applies to the whole cup. The cross-sectional area of the cup is not constant.