Worksheet 2

1. Determine the molar mass of the following compounds using the data list below.

   H = 1.01; O = 16.00; N = 14.01; C = 12.01; Na = 22.99; Cl = 35.45

   a. CO$_2$
   b. NO
   c. H$_2$O$_2$
   d. NaCl
   e. HNO$_3$

2. The temperature of a fixed mass of an ideal gas goes from 40.0 °C to 80.0 °C at a constant volume. If the initial pressure was $x$, what is the new pressure?

3. A 22.8 litre tank is filled with neon gas (20.18 g mol$^{-1}$). If the mass of the neon is 56.2 kg and the temperature is 111 °C, what is the pressure inside the tank?

4. A gas is compressed to a third of its original volume which forces the temperature to increase from 15.5 °C to 70.0 °C. If the new pressure is $4.03 \times 10^6$ Pa, what was the original pressure?

5. 21.6 m$^3$ of nitrogen gas is in a tank at 22.2 °C and a pressure of $1.44 \times 10^5$ Pa. What is the mass of nitrogen gas in the tank? (Hint: nitrogen is diatomic.)