

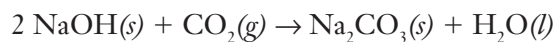
## GAS LAWS PART III

NAME \_\_\_\_\_

SECTION \_\_\_\_\_

1. Calculate the volume of a sample of helium at  $-33.0\text{ }^{\circ}\text{C}$  and  $1.23\text{ atm}$  if it occupies a volume of  $2.34\text{ L}$  at  $54.5\text{ }^{\circ}\text{C}$  and  $1026\text{ mmHg}$ .
2. A  $0.751\text{ mol}$  sample of an ideal gas occupies a  $10.0\text{ liter}$  flask at  $27.0\text{ }^{\circ}\text{C}$  and  $1.85\text{ atm}$ . If  $0.257\text{ mol}$  of the gas are removed from the container, calculate the new pressure. (Assume the temperature remains constant.)
3. What is the volume of a bulb that contains  $3.56\text{ g}$  of nitrogen gas at  $25.0\text{ }^{\circ}\text{C}$  and  $3.50\text{ atm}$ ?
4. Calculate the density of  $\text{SF}_6$  at  $1.00\text{ atm}$  and  $0.00\text{ }^{\circ}\text{C}$ .

5. Consider the reaction



which is a chemical means, although not economically viable, of removing  $\text{CO}_2$  from the atmosphere. How many liters of  $\text{CO}_2$  at  $25.0^\circ\text{C}$  and  $745 \text{ mmHg}$  can be removed by  $1.00 \text{ kg}$  of  $\text{NaOH}$ ?

6. Calculate the total pressure in a  $10.0 \text{ liter}$  flask at  $21^\circ\text{C}$  which contains  $4.00 \text{ g H}_2$ ,  $12.0 \text{ g O}_2$ , and  $8.00 \text{ g He}$ .

7. A common laboratory preparation of  $\text{O}_2$  involved the decomposition of hydrogen peroxide,  $\text{H}_2\text{O}_2$ , according to the equation:



If  $240 \text{ mL}$  of  $\text{O}_2$  at  $23^\circ\text{C}$  and at  $0.965 \text{ atm}$  pressure are collected over a sample of water at the same temperature, determine the number of moles of  $\text{O}_2$  obtained in the reaction.