5.45, p 217

3.92 mL	→	V = ?
760 mmHg = P		1 atm = P
18°C = 291 K		0°C = 273 K

$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

760 mmHg = 1 atm, P constant

$$\frac{V_1}{T_1} = \frac{V_2}{T_2} \qquad \frac{3.92\ mL}{291\ K} = \frac{V_2}{273\ K}$$

$$3.68\ mL = V_2$$

$2LiOH + CO_2 \longrightarrow Li_2CO_3 + H_2O$

327 g LiOH ; what V of CO_2 at 218°C, 781 mmHg can be absorbed?

LiOH : 23.95 g LiOH = mol LiOH 760 mmHg = atm

$$327\text{ g LiOH} \times \frac{\text{mol LiOH}}{23.95\text{ g LiOH}} \times \frac{\text{mol } CO_2}{2\text{ mol LiOH}} = 6.8267\text{ mol } CO_2$$

$V = \frac{nRT}{P}$ | $n = 6.8267$ mol $T = 218°C = 491$ K

$R = 0.08206 \frac{\text{L·atm}}{\text{mol·K}}$ $P = 781$ mmHg $= 1,027$ atm

$$V = \frac{(6.8267\text{ mol})\left(0.08206 \frac{\text{L·atm}}{\text{mol·K}}\right)(491\text{ K})}{(1,027\text{ atm})}$$

$= 268$ L

6.63, p 257

0.180 kg H_2O, change temp from 19°C to 96°C

Find Q

sp ht H_2O = 4.18 J/g°C

$$Q = \text{mass} \times \text{sp ht} \times \Delta T$$

$$= (180\,g)\left(4.18\,\frac{J}{g^{\circ}C}\right)(96^{\circ}C - 19^{\circ}C)$$

$$Q = 57934.8\,J$$

$$Q = \boxed{58\ kJ}$$