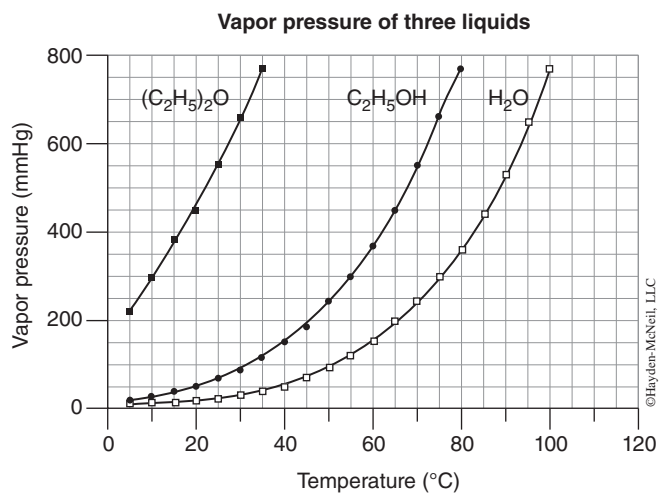


VAPOR PRESSURE AND TEMPERATURE

NAME _____

SECTION _____

1. Using the information on the graph below, explain how a change in temperature of a liquid effects its vapor pressure.



2. Write the Clausius-Clapeyron equation in the space below and define each term.

3. Given that the vapor pressure of ammonia is 164 mmHg at $-56\text{ }^{\circ}\text{C}$, calculate the vapor pressure at $-45\text{ }^{\circ}\text{C}$. $\Delta H_{\text{vap}}^{\circ} = 28.0\text{ kJ/mol}$.
4. Calculate the normal boiling point of ammonia knowing the vapor pressure at $-38\text{ }^{\circ}\text{C}$ is 538 mmHg. $\Delta H_{\text{vap}}^{\circ} = 28.0\text{ kJ/mol}$.
5. Using the vapor pressure data for acetic acid, $\text{CH}_3\text{COOH}(l)$,

$t\text{ (}^{\circ}\text{C)}$	$P_v\text{ (mmHg)}$
10.0	6.00
20.0	11.6
30.0	21.3
40.0	37.3
50.0	63.7

complete the table below and plot $\ln(P_v)$ vs. $1/T\text{ (K)}$ on your calculator. Use your graph to estimate the heat of vaporization of acetic acid. (Note: \ln is the natural log function.)

$T\text{ (}^{\circ}\text{C)}$	$T\text{ (K)}$	$1/T\text{ (K)}$	$P_v\text{ (mmHg)}$	$\ln(P_v)$
10.0	283		6.00	
20.0	293		11.6	
30.0	303		21.3	
40.0	313		37.3	
50.0	323		63.7	