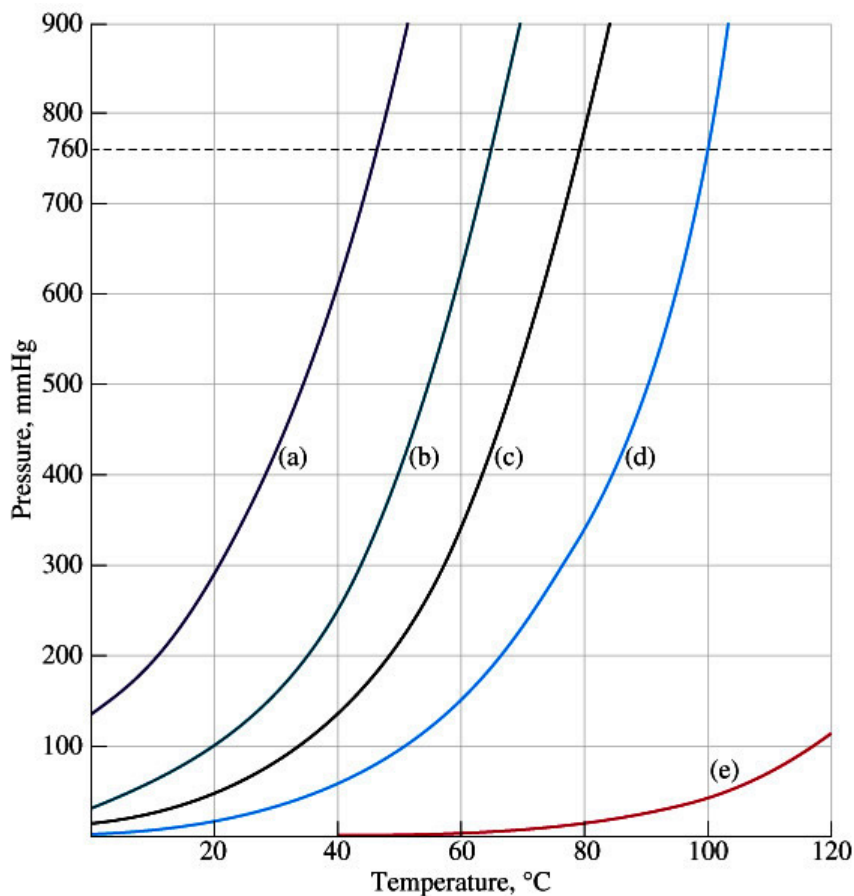


WKS
Vapor Pressure

Name _____
Period _____ Date _____

Use the graph of vapor pressure as a function of temperature for several liquids, at right, to answer the following questions. For all, the vapor pressure increases with temperature. Shown are: (a) carbon disulfide, CS_2 ; (b) methanol, CH_3OH ; (c) ethanol, $\text{CH}_3\text{CH}_2\text{OH}$; (d) water, H_2O ; (e) aniline, $\text{C}_6\text{H}_5\text{NH}_2$.



1. Estimate the boiling point for CS_2 , CH_3OH , and $\text{CH}_3\text{CH}_2\text{OH}$.
2. Why can you not tell the exact boiling point for $\text{C}_6\text{H}_5\text{NH}_2$ from this graph? What would you *guess* the boiling point to be? [Show me your estimate and I'll tell you the actual value.]
3. The atmospheric pressure in Denver, at an altitude of 1700 m, is only 79.5 kPa. Estimate the boiling point of water at this altitude. [Hint: what is the pressure in mm Hg?]
4. The atmospheric pressure at the top of Mt. Everest is about 30 kPa. About how much lower is the boiling point on Mt. Everest than in Denver?
5. Estimate at what temperature the vapor pressure of H_2O is 100 mm Hg.
6. Estimate the vapor pressure of CS_2 at 40°C . Of H_2O at 40°C . Why is the vapor pressure of CS_2 so much higher, at a given temperature, than that of H_2O ?
7. What does the trend in boiling point tell you about the relative strengths of the intermolecular forces for the 5 substances? Which substance has the lowest forces? Which has the highest?