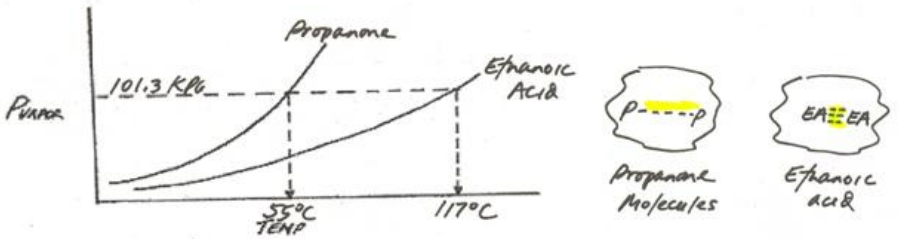
Aim: Which factors determine the BP of a liquid? Part 2

Relationship between BP and Intermolecular Forces of Attraction (IMAs)
TABLE H

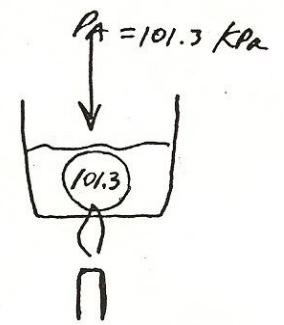
Between molecules



Weaker IMAs, faster rate of evap, higher Pvapor, lower BP

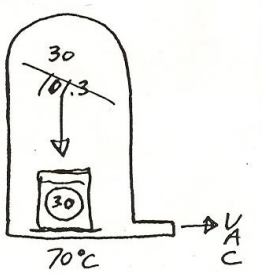
2) There are **two ways** to make a liquid boil.

a) **Heat it**.
WHY? increasing temperature, increases Pvap



b) **"Vac" it**. In other words, put it in a vacuum chamber.
WHY? decreases Patm

DEMO. Boiling water in vacuum chamber.



OK, let's do some vapor pressure curve problems!

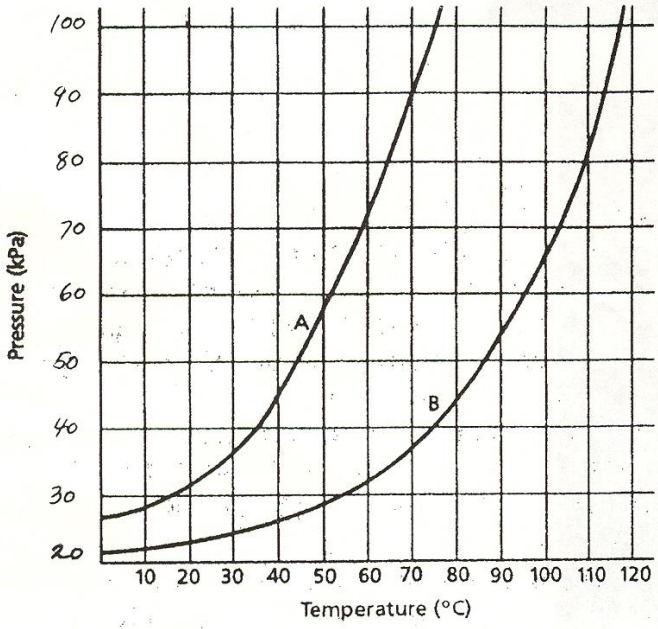
Name _____ Date _____ Class _____

CHAPTER 11 REVIEW ACTIVITY

Text Reference: **Section 11-10**

Vapor Pressure and Boiling

The following graph shows vapor pressure curves for two substances, A and B.



Answer the following questions.

1. What is the vapor pressure of **A** at 35°C? — 1. 40 kPa
2. What is the vapor pressure of **B** at 35°C? — 2. 25
3. At what temperature is the vapor pressure of **A** 101.3 kPa? — 3. 75 °C
4. What is the vapor pressure of **B** at this temperature? — 4. 40 kPa
5. At what temperature is the vapor pressure of **B** equal to 101.3 kPa? — 5. 117 °C
6. What is meant by "normal boiling point"? — 6. P_A = 101,3 kPa
7. What is the normal boiling point of **A**? — 7. 75 °C
8. What is the normal boiling point of **B**? — 8. 117 °C
9. At what temperature would **A** boil if atmospheric pressure were 80 kPa? — 9. 65 °C
10. What would the atmospheric pressure have to be in order for **B** to boil at the temperature you gave as your answer to Question 9? — 10. 35 kPa

P.S. As the water continues to boil at lower and lower pressures, the temperature keeps **decreasing** because boiling is an **endothermic** process. Eventually, the water begins to freeze, while it's boiling. At this point, all three states are in equilibrium; it's called the "**triple point".**

Finally, a pressure cooker is like the opposite of a vacuum chamber. Since the steam isn't allowed to escape, it increases the pressure pushing down upon the surface of the liquid, thereby, increasing its BP. As a result, the food cooks faster.