Name: _____   Date: _____

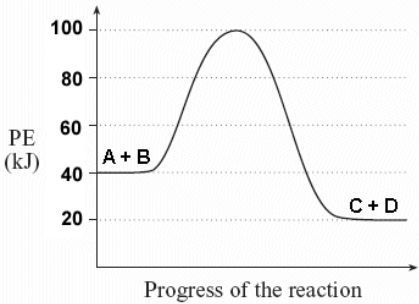Chem R Pd. _____   Regents Review

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<u>Calculations in Chemistry (with or WITHOUT the reference tables ☹)</u>

1) Read each question and determine if the formula required is on your reference tables or not.
2) Show the correct numerical set-up and solve each problem. You should have units in your answer.

1. How much heat is required to turn 15 grams of ice into liquid at 0°C?	2. Convert 25°C to Kelvin.

3. Instead of raising you hand and asking what to round to for question #4 → How many significant figures are in…
 	
 ☆   0.4 L = _____
           5.2 atm = _____
           2.14 L = _____
           Your answer should have _____ sig figs!
	4. An aerosol can contains 0.4L of gas at a pressure of 5.2 atm. If the gas is sprayed into a container with a volume of 2.14 L, what will be the new pressure?

5. What is the percent by mass of oxygen in $Al(NO_3)_3$?	6. a. Convert 12,000 Joules to kJ. b. Write 12,000 J in scientific notation. ☆
7. How much heat is required to turn 5 grams of water into steam at 100°C?	8. How many grams of NaOH are in 1.5 moles of NaOH?
9. A 25ml solution of 0.5M NaOH is titrated until neutralized into a 50 ml sample of HCl. What is the molarity of the HCl?	10. If 2.5 liters of solution contains 5 moles of dissolved solute, what is its molarity?

11. What is the concentration of a solution, in parts per million, if 0.02 gram of NaCl is dissolved in a 1000 gram solution?	12. If 12 grams of concentrated hydrochloric acid are dissolved in 1 L of water, what is the molarity of the solution?
13. A student measures the mass of a sample to be 5.51 grams. The actual mass of the sample is known to be 5.30 grams. Calculate the percent error.	14. Cyclohexane has an empirical formula of CH_2. If the molar mass of the molecule is 84g/mol, what is its molecular formula? ☆
15. Copper has 2 naturally occurring isotopes: Cu-63 has a mass of 62.93 and a relative abundance of 69.17%, and Cu-65 has a mass of 64.93 and a relative abundance of 30.83%. Calculate the atomic mass of copper. ☆	16. A hydrated salt has a mass of 9.0 grams. The salt is heated to a constant mass of 6.3 grams. What is the % mass of water in the hydrate?
17. If 1 gram of water absorbs 2000 Joules of heat at 25°C, what is the final temperature?	18. What is the density of CO gas if 0.196 g occupies a volume of 100. ml?
19. Calculate the heat of reaction (ΔH) for the reaction A + B → C + D. ☆	20. If 1.0 gram of cesium-137 decays over a a period of 90 years, how much cesium-137 will remain unchanged? (Need to use Table N, but no calculation formulas for half-life are given on the Reference Tables) ☆