Name: __________________________ Date: __________________

1. What does the superscript ° mean when added to ∆H. (or in other words what is the difference between ∆H and ∆H°)

2. Given the reaction: CaO(s) + 3C(s) → CaC₂(s) + CO(g) ∆H°rxn = 464.8 kJ
   (a) How much heat (in kJ) is evolved or absorbed in the reaction of 233.0 g of calcium oxide with enough carbon to produce calcium carbide? 2(a) __________
   (b) Is the process exothermic or endothermic? 2(b) __________

3. Given the reaction: 2Na(s) + 2H₂O(l) → 2NaOH(aq) + H₂(g) ∆H°rxn = -368.4 kJ
   (a) How much heat (in kJ) is evolved or absorbed in the reaction of 1.00 grams of Na reacts with 24.0 grams of H₂O. 3(a) __________
   (b) Is the reaction exothermic or endothermic? 3(b) __________

4. Methyl tert-butyl ether (MTBE, C₅H₁₂O, ∆H°f = -313.6 kJ/mol) is an additive to gasoline added to boost octane ratings. Write a balanced reaction for its combustion and calculate the standard heat of combustion (for combustion reactions this is the same as ∆H°rxn) in kJ. Additional information from Appendix II-B might be required to solve this problem.

5. Calculate ∆H°f (in kJ/mol) for benzene given the following reaction: 2C₆H₆(l) + 15O₂(g) → 12CO₂(g) + 6H₂O(l) with ∆H°rxn = -6534 kJ. Compare the value you calculated with the tabulated value of 49.0 kJ/mol. What is the Percent Error in your Calculation? Additional information from Appendix II-B might be required to solve this problem.