

Name: _____

Band: _____

HW 10.2

Old concepts: calculating GMM, stoichiometry. New concepts: endo/exothermic, heats of reaction/phase change

- 1) How much heat is released when 8.46 g D₂O (deuterium water) solidifies at its melting point? (Molar heat of fusion = 6.34 kJ/mole) (D₂O GMM = 20 g).

= _____ kJ

the above phase change is (circle one): endothermic exothermic

- 2) How many kilojoules of heat are absorbed when 0.46 g C₂H₅Cl vaporizes at its boiling point? (Molar heat of vaporization is 26.4 kJ/mole)

= _____ kJ

the above phase change is (circle one): endothermic exothermic

- 3) How many moles of NH₄NO₃ must be dissolved in water so that 88 kJ of energy is absorbed from the water? (Molar heat of solution is 25.7 kJ/mole)—in this case, dissolving the NH₄NO₃ is an endothermic process.

= _____ moles

- 4) How much heat in kJ is required to melt 54 grams of ice at 0 °C into water at 0 °C. You may need one or more of these numbers: heat of fusion is 6.01 kJ/mole, heat of vaporization is 45.7 kJ/mole.

= _____ kJ

- 5) How much heat is required to convert 9 grams of H₂O at 100 °C into steam at 100 °C? You may need one or more of these numbers: heat of fusion is 6.01 kJ/mole, heat of vaporization is 45.7 kJ/mole.

= _____ kJ

- 6) How much heat is produced when 0.58 mol of CH₄ is burned?
CH₄ + 2O₂ → CO₂ + 2 H₂O Δ H rxn = -890 kJ/mole

= _____ kJ

the above reaction is (circle one): endothermic exothermic

- 7) How many kilojoules are given off when 6.55 grams Mg reacts?
2Mg + O₂ → 2 MgO Δ H rxn = -1204 kJ/mole

= _____ kJ

- 8) How many kilojoules of heat are given off when 56 grams CO reacts?
3CO + Fe₂O₃ → 2 Fe + 3 CO₂ Δ H rxn = -24.7 kJ/mole

= _____ kJ

- 9) How many kJ/mole of heat are released when 456 g of CS₂ forms?
C + 2S → CS₂ Δ H rxn = 89.3 kJ/mole

= _____ kJ

- 10) How much heat is absorbed when 235 grams of I₂ sublimates?
I₂ (s) → I₂ (g) Δ H sublimation = 62.4 kJ

= _____ kJ