Heat Practice Problems Name KEY

SOLVE THE FOLLOWING PROBLEMS FOR THE GIVEN EQUATIONS

1) $N_2 + 3\ H_2 \rightarrow 2\ NH_3$ $\Delta H = -91.8$ kJ

a. Calculate the heat released (kJ) for the reaction in which 9.07 g of NH_3 is formed.

-24.489 KJ

b. Calculate the heat released in kJ when using 24.3 grams of N_2?

-79.67 KJ

2) $3\ NO_2 + H_2O \rightarrow 2\ HNO_3 + NO$ $\Delta H = -308.1$ kJ

a. What amount of heat energy (kJ) is released in forming 15.0 g of HNO_3 by the following reaction?

-36.68 KJ

b. How much energy (kJ) is released when 55.0 g of H_2O are used?

-941.41 KJ

3) $2\ Al + Cr_2O_3 \rightarrow Al_2O_3 + 2\ Cr$ $\Delta H = -536$ kJ

a. Aluminum reacts with chromium(III) oxide according to the following equation. How much heat (kJ) is released by the reaction of excess aluminum with 25.0 g of Cr_2O_3?

-88.16 KJ

b. How much heat (kJ) is released when 32.0 g of aluminum are used?

-317.63 KJ