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| *Energy Again*CλeMis+ry: http://genest.weebly.com Stop in for help every day at lunch and Tues &Thurs after school! |  | Name\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_\_\_\_ |

This should look familiar; you saw some of it in early March.



1. Classify the following as exothermic or endothermic:
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 550 kJ is released
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ The energy level of the products is higher than that of the reactants.
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ The metabolism of glucose in the body provides energy.
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ The energy level of the products is lower than that of the reactants.
6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 125 kJ is absorbed

Energy in Chemical Reactions

1. Classify the following as exothermic or endothermic reaction and **give ΔH** for each:
2. Gas burning in a Bunsen burner: CH4 + 2O2 → CO2 + 2H2O + 890 kJ
3. Dehydrating limestone: Ca(OH)2 + 65.3 kJ → CaO + H2O
4. Formation of aluminum oxide and iron from aluminum and iron(III)oxide:
5. 2Al + Fe2O3 → Al2O3 + 2Fe + 850 kJ
6. Combustion of propane: C3H8 + 5O2 → 3CO2 + 4H2O + 2200 kJ
7. Formation of table salt: 2Na + Cl2 → 2NaCl + 2H2O + 819 kJ
8. Decomposition of phosphorous pentachloride: PCl5 + 67 kJ → PCl3 + Cl2

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|  | ***Watch and copy the solution.***1. How much heat is released when 27.5 grams of CH4 is combusted in oxygen?

CH4(g) + 2O2(g) CO2(g) + 2H2O(L) ∆H = -890.4 kJManual link for the video Thermochemical Equations Practice ProblemsTyler DeWitt https://www.youtube.com/watch?v=8m\_FCe5aCq |
| Thermochemical Equations Practice Problems Click the link at genest.weebly.com Watch only 0:00 to 4:45 ! |

1. How much heat is released when 766 grams of CH4 is combusted in oxygen?
2. How much heat is released when 766 moles of CH4 is combusted in oxygen? Note the unit is different!

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|  | ***Watch and copy the solution.***1. How much heat is released when 79.2 grams of O2 is combusted with excess methane?

CH4(g) + 2O2(g) CO2(g) + 2H2O(L) ∆H = -890.4 kJManual link for the video Thermochemical Equations Practice ProblemsTyler DeWitt https://www.youtube.com/watch?v=8m\_FCe5aCq |
| Thermochemical Equations Practice Problems Click the link at genest.weebly.com Watch only 4:45 to 7:48 ! |

1. Now let’s try an endothermic reaction. How much heat is *absorbed* by a reaction where 138 grams of calcium hydroxide are turned into quicklime (CaO, used to make cement)? Use your periodic table and the coefficients from the following balanced equation:

Ca(OH)2 → CaO + H2O ∆H = + 65.3 kJ

1. When 77.4 grams of sodium react, how much heat is given off?

2Na + Cl2 → 2NaCl + 2H2O ∆H = -819 kJ