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**Worksheet 11**

1. Calculate the energy released as 100 grams of water cools from 80⁰C to -15⁰C. (Ch. 12) **(69,962 J)**
2. Determine the energy needed to melt 25 moles of water. (Ch. 12) **(150,000 J)**
3. A mixture of three gases exerts a pressure of 2.95 atm. If gases A & B together exert 1.67 atm, what is the pressure created by gas C? (Ch. 11) **(1.28 atm)**
4. Determine the volume of a gas at 150 kPa and 25⁰C if the same amount of gas occupies 5 L at 165 kPa and 29⁰C. (Ch. 11) **(5.43 L)**
5. Determine the freezing point depression if 43 grams of strontium fluoride (SrF2) is dissolved into 1000 grams of water. (Ch. 12) **(1.900 C)**
6. Calculate the energy given of as an electron moves from an energy level of three to energy level of one. (Ch. 9)  
   **(-1.94E-18 J)**
7. Consider the reaction listed below: (Ch. 8)

|  |  |
| --- | --- |
| H2 (g) + 2 C (s) + N2 (g) 2 HCN (g) | H = +270.3 kJ |

If 19 grams of nitrogen is reacted, how much energy will be absorbed? **(183 kJ)**

1. Calculate the theoretical yield of grams of hydrogen gas in a reaction between 40 grams of magnesium and an excess of nitric acid according to the reaction: (Ch. 11) **(3.33 g)**

Mg + HNO3 🡪 H2 + Mg(NO3)2

* 1. If 1.7 grams of hydrogen gas is the actual yield, what is the percent yield? **(51%)**

1. Calcium carbonate decomposes at high temperatures to form carbon dioxide and calcium oxide: (Ch. 11)

CaCO3 🡪 CO2 + CaO

How many grams of calcium carbonate will I need to form 3.45 liters of carbon dioxide at 1.5 atm and 25⁰C? **(21 g)**

1. How many liters of 0.100 M HCl would be required to react completely with 5.00 grams of calcium hydroxide according to the reaction: (Ch. 14) **(1.35 L)**

HCl + Ca(OH)2 🡪 H2O + CaCl2