**Skill 31.01 Problem 1**

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| Marshmallows (M2) react with hot tamales (T2) according to the following equation.  2M2 + T2 🡪 2M2T  If 5.0 moles of hot tamales react with excess marshmallows, how much in moles of MarshmallowHotTamalide can be made. |
| |  |  |  | | --- | --- | --- | | **Given** | **Mole ratio** | **Unknown** | |  |  |  | |  |  |  | |

**Skill 31.01 Problem 2**

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| Atmospheric oxygen reacts with nitrogen in automobile engines to produce NO, a poisonous greenhouse gas  O2 + N2 🡪 2NO  If 5 moles of nitrogen react, how much oxygen gas in moles is consumed? |
| |  |  |  | | --- | --- | --- | | **Given** | **Mole ratio** | **Unknown** | |  |  |  | |  |  |  | |

**Skill 31.02 Problem 1**

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| Marshmallows (M2) react with hot tamales (T2) according to the following equation.  2M2 + T2 🡪 2M2T  What mass of marshmallows (1 mole M2 = 11.0 g) is needed to produce 3 moles of MarshmallowHotTamalide. |
| |  |  |  |  | | --- | --- | --- | --- | | **Given** | **Mole ratio** | **Molar mass Unknown** | **Unknown** | |  |  |  |  | |  |  |  |  | |

**Skill 31.02 Problem 2**

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| In the lower atmosphere where we live, NO and UV light catalyze the production, O3 from O2 as shown,  3O2 🡪 2O3  If 10.0 moles of oxygen react, how much in grams of O3 (1 mole = 48 g) is produced? |
| |  |  |  |  | | --- | --- | --- | --- | | **Given** | **Mole ratio** | **Molar mass Unknown** | **Unknown** | |  |  |  |  | |  |  |  |  | |

**Skill 31.03 Problem 1**

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| Marshmallows (M2) react with hot tamales (T2) according to the following equation.  2M2 + T2 🡪 2M2T  If 3.0 g of hot tamales (1 mole = 48.0 g) react with excess marshmallows, how many moles of MarshmallowHotTamalide can be made. |
| |  |  |  |  | | --- | --- | --- | --- | | **Given** | **Molar mass given** | **Mole ratio** | **Unknown** | |  |  |  |  | |  |  |  |  | |

**Skill 31.03 Problem 2**

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| How much, in moles, of 1-chloropropane (C3H7Cl) is produced if 400. g of C3H8 (1 mole = 44 g) react with excess chlorine gas according to the equation  C3H8 + Cl2 🡪 C3H7Cl + HCl |
| |  |  |  |  | | --- | --- | --- | --- | | **Given** | **Molar mass given** | **Mole ratio** | **Unknown** | |  |  |  |  | |  |  |  |  | |

**Skill 31.04 Problem 1**

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| Marshmallows (M2) react with hot tamales (T2) according to the following equation.  2M2 + T2 🡪 2M2T  How much in grams of hot tamales (1 mole = 48.0 g) is needed to produce 2.0 g of MarshmallowHotTamalide (1 mole = 35.0 g) |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Given** | **Molar mass given** | **Mole ratio** | **Molar mass Unknown** | **Unknown** | |  |  |  |  |  | |  |  |  |  |  | |

**Skill 31.04 Problem 2**

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| Laughing gas (nitrous oxide, N2O) is sometimes used as an anesthetic in dental work. It is produced when ammonium nitrate is decomposed according to the reaction,  NH4NO3 🡪 N2O + 2H2O  How many grams of NH4NO3 (1 mole = 80 g) are required to produce 33.0 g of N2O (1 mole = 44 g)? |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Given** | **Molar mass given** | **Mole ratio** | **Molar mass Unknown** | **Unknown** | |  |  |  |  |  | |  |  |  |  |  | |