

This worksheet will take you through a calculation of molarity of products in solution similar to question 1 on homework 4 and quiz 3. As written, it calls for a large bag of snack-sized Halloween candy (Kit Kat, Hershey's, Reese's, and AlmondJoy). This worksheet could be equally well done with pieces of paper cut into different shapes.

Starting Materials:

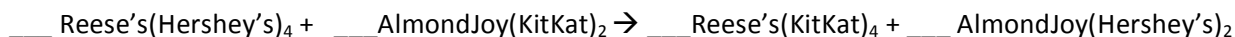
1 KitKat → Break apart the sticks to have two KitKat anions charged -1. (3.79g/mol)

1 Hershey's Bar → Break apart the squares to have 4 Hershey's anions charged -1. (7.55g/mol)

Almond Joy → A 2+ metal cation (16.5 g/mol)

Reese's → A 4+ metal cation (17.5 g/mol)

Open your four pieces of candy. Balance the following reaction



Answer: 1,2,1,2

Imagine that each candy piece represents a mole (ie: you have 1 mole of Reese's and 4 moles of Hershey's). Now imagine that you crushed Reese's(Hershey's)₄ and created a solution in 300.3mL of water in beaker A. Imagine you also crushed up AlmondJoy(KitKat)₂ and created a solution in 200.8mL of water in beaker B. Assume that both reactants are completely soluble.

What is the molarity of:

Reese's(Hershey's)₄ _____

AlmondJoy(KitKat)₂ _____

Answer: 3.300M, 4.980M

How many ions of Reese's⁴⁺ are in beaker A? _____

How many ions of Hershey's⁻ are in beaker A? _____

How many ions of Almond Joy²⁺ are in beaker B? _____

How many ions of KitKat⁻ are in beaker B? _____

Answer: 1 mol, 4 mol, 1 mol, 2 mol

Now pour the solutions together into beaker C. A precipitate of Reese's(KitKat)₄ falls to the bottom of the beaker.

How many moles of Almond Joy²⁺ are in beaker C? _____

How many moles of Hershey's⁻ are in beaker C? _____

How many moles of the precipitate form at the bottom of beaker C? _____

How many grams of the precipitate form at the bottoms of beaker C? _____

How many moles of KitKat⁻ are in beaker C? _____

How many moles of Reese's⁴⁺ are in beaker C? _____

Answer: 1 mole, 4 moles, 0.5moles, 0.0153g, 0 moles, 0.5 moles

What is the molarity of:

AlmondJoy²⁺ in beaker C? _____

Hershey's⁻ in beaker C? _____

Precipitate in beaker C? _____

KitKat⁻ in beaker C? _____

Reese's⁴⁺ in beaker C? _____

Answer: 1.996M, 7.982M, 0M, 0M, 0.9978M