Name_____ Period _____ Date _____

Solutions

STEM Sims

Lesson 1: Mixing it Up

Solutions are made up of two parts, a solvent that does the dissolving and a solute that is dissolved. If a liquid solvent dissolves a liquid solute, the liquids are said to be miscible. Are you ready to test the miscibility of various liquids?

Doing the Science

1. Start the Solution Simulation by clicking on the "Sim" tab.
2. Click on the bottle containing H_2O to add the liquid to the beaker.
3. Click on the bottle containing CCl_4 to add the liquid to the water in the beaker. Click the "Stir" button.
4. A solution has a uniform composition, while a heterogeneous mixture forms layers. Record in Table 1 whether the system in the beaker is a solution or heterogeneous mixture.
5. Click the "Reset" button to begin your next mixing.
6. Repeat the process and mix the following liquids, two at a time: H_2O and Hexane, H_2O and Methanol, CCl_4 and Hexane, CCl_4 and Methanol, Hexane and Methanol. Make sure to record your results in Table 1.

Table 1.

Mix	Results (Circle your response)	
H_2O and CCl_4	Solution	Heterogeneous Mixture
H_2O and Hexane	Solution	Heterogeneous Mixture
H_2O and Methanol	Solution	Heterogeneous Mixture
CCl_4 and Hexane	Solution	Heterogeneous Mixture
CCl_4 and Methanol	Solution	Heterogeneous Mixture
Hexane and Methanol	Solution	Heterogeneous Mixture

Do You Understand?

1. A general "rule of thumb" in investigating solutions is that "like substances dissolve other like substances." If this is the case, which of the substances you tested are most alike? Which substances are most different?

2. If a mystery substance dissolves in hexane, but *not* in methanol, is the mystery substance more like H_2O or more like CCl_4?

3. Imagine your favorite coat got a spot of grease on one sleeve. If grease dissolves in hexane, would you expect water to remove the spot of grease from your coat's sleeve? Please explain your response.