



Disappearing Pumpkins!

Are you looking for something to do with leftover candy? Investigate the solubility of pumpkin candy in different liquids and take your students' observation skills to the next level.

You will need:

3 transparent cups, jars, or beakers
3 pumpkin candies
Water
Colourless pop (containing sugar)
Vegetable oil
Marker
Timer



What to do:

1. Have your students label three cups as either: water, oil, or pop. Fill each cup halfway with the designated liquid and drop one pumpkin candy into each cup.
2. Observe the pumpkins, every five minutes, for 30 minutes.

What's happening?

The ability to make detailed and careful observations is a skill that needs to be developed and honed. Asking questions, while students are making their observation, increases their attention to detail and allows them to deepen their observational skills.

Students should observe that the pumpkin candy dissolves in pop and water, but not oil. Colour from the candy will disperse faster in pop than in water. In the cup containing water, the coloured dye is dispersed through random molecular motion, unless students swirl, stir or bump this cup. Whereas in the pop, carbonation plays a role. The release of carbon dioxide bubbles from the pop provides agitation, which allows the dye to spread throughout the pop at an increased rate.

On close observation, students will notice that, once the pumpkins are submerged, a waxy substance will begin to peel away from the pumpkin, but will remain in essentially one piece if the cup is left undisturbed. Once the waxy substance peels away, the coloured sugar beneath begins to dissolve.

Why do substances dissolve? The cardinal rule of solubility is "like dissolves like". If two substances have similar polarities, one will dissolve in the other, and they will form a solution. Polarity is a term which describes the distribution of electrons within a molecule. The atoms in some molecules are arranged such that one end of the molecule has a partial positive electrical charge and the other end has a partial negative charge. In this case, the molecule is said to be polar, meaning that it has electrical poles. Otherwise, it is called a non-polar molecule. The degree of polarity of each molecule in a mixture will determine if it will form a solution. Sugar and water are both polar molecules and hence water has the ability to dissolve sugar. Pop, which contains a large amount of water, also has the ability to dissolve sugar. Oil is non-polar and therefore will not dissolve sugar, and is also immiscible with water.

Extensions:

Try this experiment using other types of candy. Do you obtain similar results for all types of candy?

