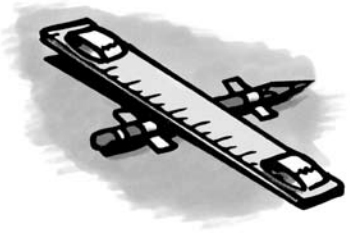
Student activity sheet
Activity 2.3

Name: _____

Solubility test

Build your own balance



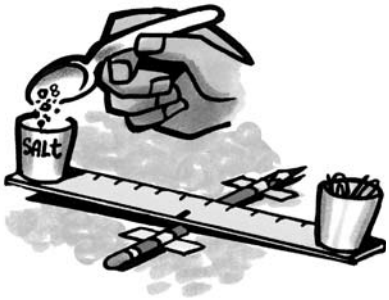
Procedure

1. Use your masking tape and pen to label five small cups **salt**, **Epsom salt**, **MSG**, **sugar**, and **unknown**. Label five larger clear plastic cups in the same way. You should have two labeled cups for each type of crystal.

2. Tape the pencil down as shown. Roll two small pieces of tape so that the sticky side is out. Stick each piece of tape to the opposite end of the ruler. Place the small empty salt cup on one piece of tape so that the edge of the cup bottom is right at the end of the ruler. Place a small unlabeled cup on the other piece of tape in the same way.

3. Lay the ruler on the pencil so that it is as balanced as possible. Use a permanent marker to make a mark on the ruler at the point where it is balanced on the pencil. This is your balance point.

Don't worry if you cannot get the ruler to balance perfectly. If you get the ruler close to balancing, it will be accurate enough.



4. Carefully place 10 paper clips in the unlabeled cup. Slowly add salt to the salt cup until the cup with the paper clips just barely lifts from the table. Remove the salt cup from the ruler and set it aside.

5. Weigh the other four crystals in the same way so that you have equal amounts of all five crystals in their small labeled cups.

Student activity sheet
Activity 2.3

Name: _____

Solubility test (*continued*)

Can you identify the unknown crystal by the amount that dissolves in water?

Use the procedure below to compare the solubilities of salt, Epsom salt, MSG, sugar, and the unknown.

Procedure

1. Place 1 teaspoon of hot tap water into each empty clear plastic cup.

2. Match up each pair of cups so that each cup of crystal is near its corresponding cup of water. With the help of your lab partners, listen for your teacher's instructions, and pour the weighed amount of each crystal into its cup of water at the same time.

3. With the help of your lab partners, swirl each cup at the same time and in the same way as your teacher counts for 20 seconds. When your teacher tells you to stop, compare the amount of crystal left behind in each cup. Listen for your teacher's instructions and swirl again for 20 seconds and observe. Swirl again for 20 seconds and make your final observations.

4. Slowly and carefully pour the solution from each clear plastic cup back into its small empty cup. Try not to let any undissolved crystal go into the small cup. Compare the amount of crystal remaining in each clear plastic cup.

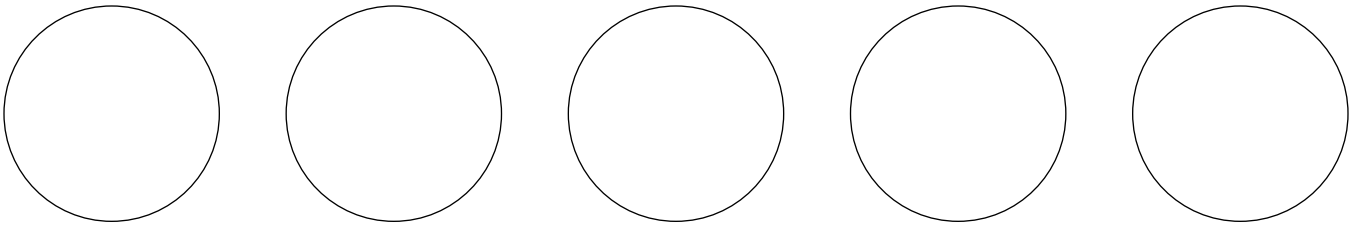
Student activity sheet
Activity 2.3

Name: _____

Solubility test (*continued*)

Can you identify the unknown crystal by the amount that dissolves in water?

1. Draw your observations. Try to show the difference in the amount of crystal remaining in each cup.



Salt Epsom salt MSG Sugar Unknown

2. Based on the amount of crystal remaining in each cup, do you have enough information to identify the unknown?

_____

_____

_____

3. Which crystals are probably *not* the unknown? _____
   Explain how your observations lead you to this conclusion.

_____

_____

_____

4. Based on what you saw in the appearance test, crushing test, and this solubility test, do you have enough information to identify the unknown? _____

   With the information you have so far, what might be the identity of the unknown?

_____