

What you need to do:

Work in groups to complete all the tests necessary to determine the identities of all the chemicals.

Water Solubility Test

1. Label 8 test tubes with the names of the chemicals on the front counter.
2. Add one spatula tip of each dry compound to its appropriate test tube and then add 5 mL of water to each. Mix the compound and water by tapping the bottom of the test tube gently. Make observations and record them in your notebook. (Which of the compounds are slightly or completely insoluble? Which of the household chemicals must these be?)
3. Set aside any of the test tubes of materials that you feel you have identified and continue testing the rest.

pH Test

4. Collect a 15-17 cm piece of pH paper from the front counter and tear it into 2.5 cm pieces.
5. Using the previously created test tubes of chemicals, place the pH paper at the mouth of each test tube and lean the tube until the paper just makes contact with the liquid.
6. Use the pH guide displayed on the pH paper dispenser to assign pH values to each of the chemicals. (Which of the chemicals can you now identify using the pH values?)
7. Place all of the chemicals that you have identified to the side and continue working only with the unknown test tubes. (Note: You should have been able to identify all but 2 of the compounds at this point)

Identification of a Sugar: Because we did not have pH information on the fruit sugar, one of the two remaining unidentified compounds should be a sugar. Complete the following procedure to determine which one:

8. Place ~30 mL of water in a 100 mL beaker.
9. Place the beaker on a hotplate set at 70°C to create a “hot water bath”.
10. Take your two remaining test tubes to the front counter and add ~10 drops of Benedict’s reagent to both test tubes.

11. Place both test tubes in the hot water bath for about 5 minutes.
12. Development of an orange color precipitate identifies the test tube containing the fruit sugar.
13. You should now have been able to match all of the household chemicals but one to their chemical names by actual tests. We will assume that the remaining tube is in fact the only remaining compound. As a good scientist, should we really be satisfied with this assumption?