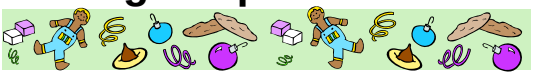
Making the perfect sherbet



What you will need

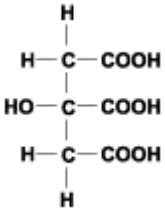
- 5 plastic cups labelled
- 3 patty cake cases
- Balance
- Icing sugar
- Citric acid
- Bi-carbonate soda
- Plastic spoons for tasting

What to do

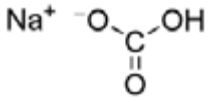
1. Label 5 plastic cups from A through to E.
2. Label 3 patty cake cases “icing sugar”, “citric acid” and “bi-carb”.
3. Place the patty cake case labelled “icing sugar” on the balance and tare the balance.
4. Weigh 3g of icing sugar and transfer if to the cup labelled A. Repeat for cups B to E.
5. From the cup labelled A taste a very small amount and record your observations.
6. Using the patty cake case labelled “citric acid” and the balance, add a measured amount of citric acid (1-5 grams) to the cup labelled B. Stir, taste a very small amount and record your observations.
7. Using the patty cake case labelled “bi-carb” and the balance, add a measured amount of bi-carb (1-5 grams) to the cup labelled C. Stir, taste a very small amount and record your observations.
8. Using the appropriate patty cake cases and the balance, measure amounts of both bi-carb and citric acid (no more than 5 grams each) and add to the cup labelled D. Stir, taste a very small amount and record your observations.
9. Write the balanced equation for the reaction between citric acid and bi-carb. Using stoichiometry, determine how much citric acid is required to react completely with 2.00 grams of bi-carb. Record your calculations.
10. Using the appropriate patty cake cases and the balance, measure 2.00g of bi-carb and the amount of citric acid calculated in the previous step. Add these amounts to the cup labelled E. Stir, taste a very small amount and record your observations.

Questions

1. When you taste the sherbet, how do you know that the citric acid and bi-carb are reacting? Why do they only react when you put them in your mouth?
2. How does sherbet taste if too much bi-carb is added? How does it taste if too much citric acid is added?
3. Using stoichiometry, calculate the volume of carbon dioxide produced if you ate all of the sherbet from cup E.
4. What might be some other practical uses of stoichiometry?



Citric Acid



Sodium bicarbonate