How the concentration of salt-water affects the rate of osmosis.

Aim: To find out how the concentration of salt-water affects the rate of osmosis in a potato.

Prediction: My prediction is when the concentration of salt-water gets higher the mass of the potato will get smaller. The reason for this is because when the concentration of salt is low the concentration of water will be high. The water moves from a high concentration to a low concentration. The potato has a low concentration of water so the water passes through the semi permeable membrane and the potato gains water through osmosis, increasing the mass of the potato. If the concentration of salt is high then the concentration of water will be low. The water passes from high concentration to a lower concentration so if the concentration of water outside the potato is lower than inside the water passes out of the potato reducing the mass of the potato.

Method:

Variables: The variables that could affect the results are:

- **The time the potato is exposed to the water because the experiment may not be left long enough to show any affect.**
- **The volume of salt-water will affect the potato because there is more water and sugar and so more water will want to move making the test unfair.**
- **The size of the potato because if they are different sizes the potato may gain more water because it can hold more making the test unfair.**
- **The concentration of the salt in the water because the salt will affect how much water will move in or out of the potato.**

The apparatus I will need is:

- **Cups.**
- **Different concentrations of salt-water.**
- **A potato.**
- **Something to cut the potato.**
- **Electronic scales.**
- **Coloured pins.**
- **A ruler.**
- **Measuring cylinder.**

This is what my experiment will look like.

The concentration of the salt in the water is the one variable I am going to change because I want to find out how the concentration of salt-water affects the rate of osmosis.

I will keep the others the same to keep this a fair test by measuring the time the experiment is done for, measuring the volume of water put into each cup and measuring the size of each piece of potato and cut them to the same size. If I did not keep these variables the same then the experiment would not be accurate.

I am going to take three measurements of each concentration of salt-water. I will use five different concentrations of salt-water, distilled water, 0.25 M, 0.5 M, 0.75 M and 1 M concentrations of salt-water.

The calculation I will do are the percentage increase in mass because they were not all the same mass when the were cut to size and to keep the test fair I will use the percentage increase to help me find out the relationship between the concentration of salt-water and the rate of osmosis.

The graph I will plot will be a line graph to help show the relation ship between the two and to make the results clearer to see.
I will make the results accurate and reliable by taking the average percentage increase from the results. I will take this by adding the three results from the one concentration and divide that by the number of results, which are three.