

Introduction!

The investigation I have to do is I have to investigate what affects the speed at which the jelly will dissolve in water. This investigation will be using the theories we have covered on the rates of reaction and the collision theory.

I am going to try to get the jelly to dissolve quicker by increasing the surface area.

I predict that when increasing the surface area of some jelly, I think each time I change the surface area then the time the jelly dissolves will be increased. I think this because each piece of the jelly I will be using will be small, so in that case there will be less to dissolve, as I think increasing the surface area in any investigation will speed up a reaction.

So the smaller the pieces of jelly, the quicker my groups reaction will happen, as more collisions. As in the collision theory, it says that when increasing a surface area more collisions will happen. This is why I feel my prediction is correct.

During this experiment I will be changing only one thing which will be the surface area of the cube of jelly.

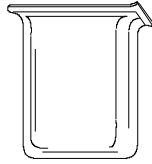
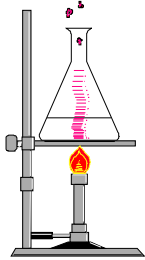
I will be keeping the temperature the same all throughout the experiment it will stay at 60⁰c, the weight of the jelly will also stay the same, every piece of jelly will be 9 grams. Keeping all of these the same will ensure that it is a fair test.

The equipment I will be using during this experiment will be:

- Bunsen Burner
- Tripod
- Jelly
- Water



- Beaker
- Stirrer
- Thermometer
- Stopwatch



Method

We will make sure this experiment is a fair test.

1. We will firstly set up the equipment in the correct way,
 2. Then when that is done we will add a 100ml of cold water into the beaker and start to heat it up, to the correct temperature of 60°C.
 3. When the water has reached this sufficient temperature, we will then cut up the jelly according to how big the pieces have to be, and then add them to the water.
 4. We will start the stopwatch at this stage while another member of the group is stirring the jelly.
 5. When the jelly has then disappeared we will stop the stopwatch and record our results in a table.
- We will then repeat all of these steps for the next lot of jelly.

Fair Test?

Yes me and the group I am in will be doing all we can to make the experiment a fair test. The only thing we will be changing throughout this experiment is the surface area of the jelly, as the temperature of the water will always be at 60°C. We will always be adding 100ml of water to the beaker to be heated. All the jelly cubes will weigh 9 gram, so the starting mass of jelly will stay the same.

It is important to make this a fair test because if we don't then our results will not be reliable.

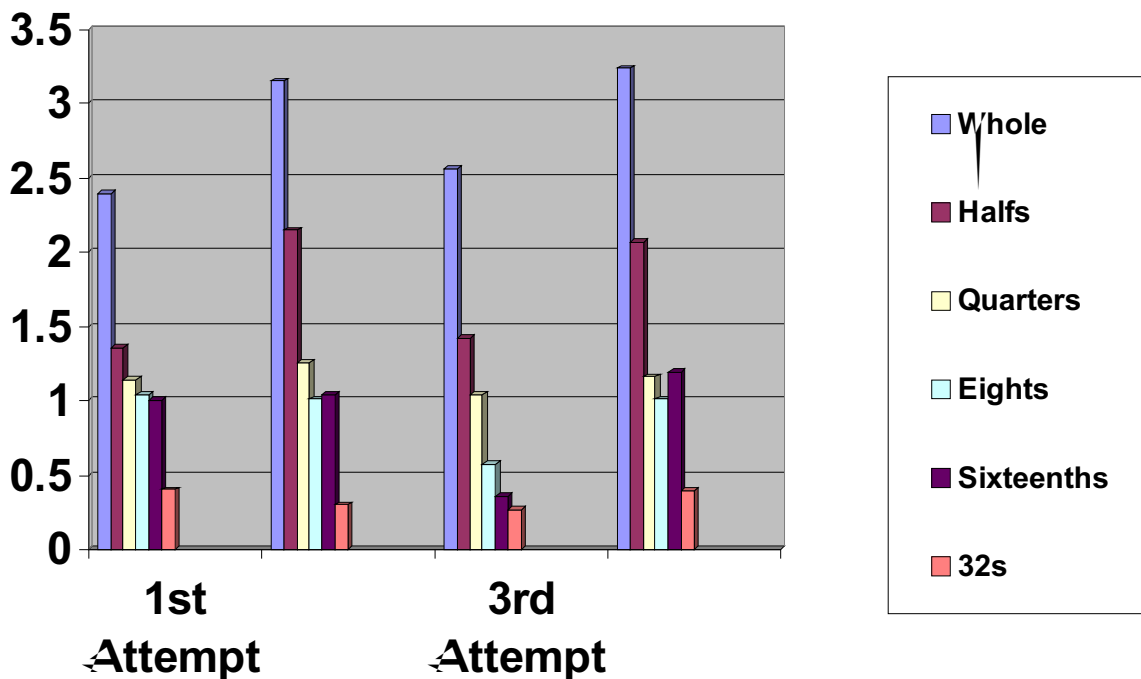
We will know when the jelly has dissolved as we will no longer be able to see it through the beaker.

Results!

Here is a table showing my results from the investigation:

| Surface Area Of Jelly | Weight Of Jelly | Time Taken | Attempt 2 | Attempt 3 | Average |
|-----------------------|-----------------|------------|-----------|-----------|---------|
| 1 | 9 Grams | 02.40 | 03.15 | 02.57 | 03.24 |
| $\frac{1}{2}$ | 9 Grams | 01.36 | 02.14 | 01.42 | 02.07 |
| $\frac{1}{4}$ | 9 Grams | 01.14 | 01.26 | 01.04 | 01.16 |
| $\frac{1}{8}$ | 9 Grams | 01.04 | 01.01 | 00.57 | 01.01 |
| $\frac{1}{16}$ | 9 Grams | 01.00 | 01.04 | 00.36 | 01.19 |
| $\frac{1}{32}$ | 9 Grams | 00.40 | 00.30 | 00.27 | 00.39 |

This is a Graph to show my results from my jelly investigation. It shows how in each attempt the results vary.



Evaluation and Analysis!

After carrying out the experiment and looking over my results I can see the results are near enough what I expected. My results support my prediction in the fact that I said I thought when we increased the surface area of some jelly the time it took to dissolve would increase and my results prove that I was correct upon saying this.

Our investigation was quite fair, but I think next time if we do the experiment again there are a few things I would change to make it a fairer test and these things would be:

- Making sure all the jelly pieces are the correct size
- Checking the temperature is spot on each time.

Overall I am happy with my results as they prove that the prediction I made was correct. You can refer to the collision theory when looking at my results, as the collision theory explains that when a surface area is increased more collisions happen which speeds up a reaction and this is exactly what happened in my experiment. The only thing that did surprise me is that on Attempt two using 2 half's took longer to dissolve than on the first attempt, this also crops up in many other places. I think this is because as I referred to before the pieces of jelly were not all the same size.

I feel this could have altered the investigation as at times there would have been big and small pieces of jelly to dissolve.