Diffusion

Aim: - Our aim is to observe the effect of various temperatures on the rate of diffusion of potassium crystals.

Hypothesis: - My prediction is that test tube which contains water with the hotter temperature, the diffusion speed of it will be faster than the cold or and the normal water. The reason why is because heat is a form of energy and the movements of the potassium crystal particles will move faster and causing it to diffuse quicker from hot water.

Variables: -

- The amount of potassium crystals used can have an effect on the speed of diffusion, because if there was too much in one and too little in the other, one will diffuse faster than the other, making this not a very fair test!
- The temperature of the water used can effect the speed of diffusion.
- The amount of water put in into each test tube is a major part that could have caused the test to not be a fair one. The water should have been the same amount in all the test tubes.

Method: -

- Rule 3 scales (in cm) onto a piece of A4 paper. (10cm)
- Collect three test tubes with rubber bungs and gauze.
- Place gauze over the tube opening and insert the bung carefully.
- Remove gauze and place some potassium crystals in the marked section.
- Fill one tube with tap water, one with ice water and one with hot water. **Make sure that the water level is just below the gauze.**
- Reinsert the gauze, with potassium crystals and rubber bungs.
- Slowly tilt the test tubes on their side and place them on each scale.
- Start the stopwatch and time how long it takes for the potassium crystals to diffuse through the water to reach the 10cm mark. **Check the time and record it down when it reaches every 1 cm.**
- Record your results down, in a table.

Results: -

Cm's	Normal Water	Ice Water	Hot Water
1	0.5 seconds	7 seconds	4 seconds
2	9 seconds	12 seconds	9 seconds
3	13 seconds	18 seconds	12 seconds
4	18 seconds	28 seconds	17 seconds
5	23 seconds	35 seconds	21 seconds

6	29 seconds	44 seconds	26 seconds
7	35 seconds	53 seconds	31 seconds
8	42 seconds	1 minute, 2 seconds	37 seconds
9	47 seconds	1 minute, 10 seconds	44 seconds
10	55 seconds	1 minute, 21 seconds	51 seconds

Conclusion: - To conclude, I learned and found out that the water temperature effects the speed of diffusion, either to slow it down or speed it up, because the movements of the potassium crystal particles is effected by the temperature its in. My results actually did support my hypothesis, which was the test tube that contains water with the hotter temperature, the diffusion speed of it will be faster than the cold or and the normal water. Though the speed of diffusion in the normal water was very close to the hot water, in fact, the diffusion speed of normal water started out quicker than in the hot water, but later the hot water's speed of diffusion finishes quicker. The speed of diffusion in ice water was way slower than the speed of it in hot and normal water. The reason why the crystals diffuse faster in hot water rather than cold water is because, in the hot water the particles of the crystals are