**Science Investigations**

          Welcome Super Scientists!

* This is an investigation that you can carry out at home. (Why not do this investigation with a younger brother

or sister then you can compare your results!)

* BEFORE you write anything, please make sure you have DOWNLOADED your own copy of this document

and saved it on your computer

* Read the method and guidelines on the *last page* of this document. Make sure you have all the resources

you need.

* Don’t forget to write your prediction before you start.

* SAFETY FIRST:

Please be careful when using glassware

Name: Zein\_\_\_\_\_\_\_\_\_\_\_\_ Class:\_\_\_\_\_ 9S\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_

Overall mark

Iced drinks

Question: *In which type of drink will the ice cube melt the fastest?*

Your prediction:

**Section 1 – Planning**

1. What will be the independent variable? (What will you change?)

The type of drink

What will be the dependent variable? (What will you measure?)

The time it takes for an ice cube to melt

What are the control variables?

(What will you keep the same to make it a fair test?)

The amount of liquid in a cup, the amount of ice cubes, the temperature, the same model of the cup, the size of an ice cube

2. Describe how you will carry out the experiment.

(Name the key equipment you will use and talk about how you will measure your results)

1. Collect apparatus
2. Place an ice cube in the Coca Cola, at the same time start the stop watch
3. Once invisible to the naked eye, stop the timer and record results
4. Repeat steps 2-3 for the remaining drinks

**Section 2 – Collecting results**

2. Record your results in a **table**.

|  |  |
| --- | --- |
| **Type of drink** | **Time it takes the ice cube to melt (seconds)** |
|  |  |
| **Coca Cola**  **Orange juice** | **37:18**  **57:11** |
| **Water**  **Milk** | **24:47**  **46:08** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

3. **Draw a** **graph** of your results.

Remember to label your axes and include the correct units.

**Section 3- Conclusions**

4a. In which drink did the iced cube melt the fastest?

In this case it was the water, this was likely because our water contains lots of solutes which speeds up the melting due to how it lowers the melting point of water. The Coca Cola would have melted faster than the water if we had water with minimum water such as Mai Dubai.

4b. **Data analysis**. Using your results, can you compare how long it took the ice cubes to melt in the different drinks?

The water melted the ice cube the fastest due to the solutes in the drink with a 24 mins. The Coco Cola melted the ice cube after that due its property of being non-carbonated and is primarily contains sugar. The milk melted after the Coca Cola then the orange juice

Improvements:

I believe that there was 1 flaw that I did in this investigation, it was the fact that I didn’t use the thermometer to measure the temperature of the drinks that were taken straight out of the fridge. This might have caused the investigation to stretch to 1 hour.

|  |
| --- |
| **Iced drinks** |
| ***In which type of drink will the ice cube melt the fastest?*** |
| **Notes**  In this investigation the students place an ice cube in glasses of different types of drinks, they then time how long it takes for the ice cube to melt. |
| **Resources needed**     * Different types of drinks   E.g. Cola and diet cola, milk,  lemonade, juice, water, milk, squash.   * A glass * Stopwatch. |
| **Variables**  **Independent variable:** What are you changing?  **Dependant variable:** What are ou measuring  **Control variables:** What two things have to be kept the same to make it a fair test? |
| **Method**   * Pour a fixed amount of drink into a glass. * Place one ice cube in the drink and time how long it takes to melt. * Repeat your experiment with different types of drink |
| **Collecting results**  Between 3-5 different drinks should be investigated.  You don’t need to repeat the experiment three times. |
| **Presenting results**  These results can be presented as a bar graph of the different types of drink against time (seconds). |
| **Interpreting data**  What did you find out?  Compare the time taken for the ice to melt in the different solutions |

Extension

1. Name the 3 states of matter

Liquid, solid, gas

1. List the names that describes the changes of state

Evaporation (liquid to gas), condensation (gas to liquid), freezing (liquid to solid), melting (solid to liquid), sublimation (solid to gas), deposition (gas to solid)

1. Use the particle theory to describe what happens when a substance changes state

A substance can change state in 2 ways, cooling and heating. When heating, the particles get further apart thus making a less dense solid and their velocity increase. This means that the entropy will increase due to the lack of order in the particles in the substance. This always forms a soft substance (liquid or gas). When cooling, the particles get closer together, the bonds get stronger and they form a hard substance (solid).