

Experiment #1

Here is your research method: Make two ice cubes of exactly the same size. (Note: you will need several ice cubes and a few ice cubes that have food colouring in them. Read the entire set of experiments to see how many regular and coloured cubes you will need.) Keep the ice cubes in a freezer until you are ready to use them. Make a saltwater solution by dissolving 2 level *tablespoons* (not *teaspoons*) of salt in exactly one cup of *room temperature* water (or dissolve 30 grams of salt in 200 mL of water). Stir the mixture until all the salt dissolves.

Take two identical small glass jars and label one "SALTWATER" and the other "TAP WATER". Add one cup (or 200 mL) of your saltwater solution to one jar and add the *same* amount of room temperature tap water to the second jar. You are going to time how long the ice cubes take to melt; so either have a clock, a wristwatch or a stopwatch handy.

Before you go any farther, make a hypothesis (guess) about what you think will happen: will an ice cube melt faster in ordinary tap water, faster in salt water, or melt equally fast in both tap water and salt water?

After you have made your guess, get two regular (not coloured) ice cubes. Next, quickly write down the exact time using your clock or wristwatch, or start your stopwatch. Finally, drop one cube in the jar containing salt water while at the same time dropping the other ice cube in the jar containing tap water. DO NOT STIR THE ICE CUBES! Time how long it takes the ice cube to melt in each jar.

You have now completed the basic experiment. Do the results of your experiment agree with your hypothesis?—Now, let's see if you can figure out why the experiment turned out like it did. A good research scientist is interested in more than simply *WHAT* happens in an experiment: the scientist wants to know *WHY* the results happen. I will help you get more information by suggesting some additional experiments to do.

Experiment #2

Read the instructions that follow before you do anything. Then make a hypothesis about what you think will happen — which ice cube will melt faster?

Instructions for experiment #2: Make up some more salt water, add equal amounts of tap water and salt water to your jars, get your ice cubes ready, start timing and drop in the ice cubes. This time, *stir* the contents of the jars slowly but constantly. Write down what you see happen.