What Makes Ice Melt Faster?

Objective: This experiment explores how salt and sugar affect the melting rate of ice in water.

**Knowing how to speed up the melting rate of ice is very important information for anyone who needs to de-ice roads or driveways after a winter storm. While it seems simple, adding salt to ice water actually activates two complex, and contradictory, chemical reactions. The salt disrupts the equilibrium of water and ice, slowing down the amount of water freezing into ice and speeding up the amount of ice melting into water. However, because of this disruption, salt lowers the temperature of the water, making the overall melting rate decrease. Which reaction will win out? We will also test the effect of sugar on ice.**

Experimental Procedure:

1. Fill each cup with water.
2. Add the same amount of ice to each (about four to five cubes, depending on size of cups).
3. In the cup labeled “salt,” sprinkle on a tablespoon of salt. Do not stir.
4. Immediately sprinkle a tablespoon of sugar into the cup labeled “sugar.” Do not stir.
5. Start the stopwatch.
6. Note down the amount of time it takes for the ice to completely melt into water for each cup.
7. Clean out the cups and repeat experiment three times or more, always keeping careful notes.
8. Analyze this data. Figure out the average time it takes for ice to melt in plain water, water with salt added and water with sugar added.
9. For further evaluation, try using different amounts of salt. Feel free to experiment with other substances as well, like rubbing alcohol or sand.

Conclusion Questions:

Does adding salt to ice and water slow down, speed up, or not change the rate the ice melts in the water?

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Is salt the only substance to have this effect? What about sugar?

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What were some of your observations during the experiment? List them below.

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Living in a Pandemic

What is it like to live through a pandemic? What observations have you made of the world around you? How are people acting? Do you have the same freedoms as you had before? What have you seen or heard through media? **Write a paragraph explaining your response.**

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