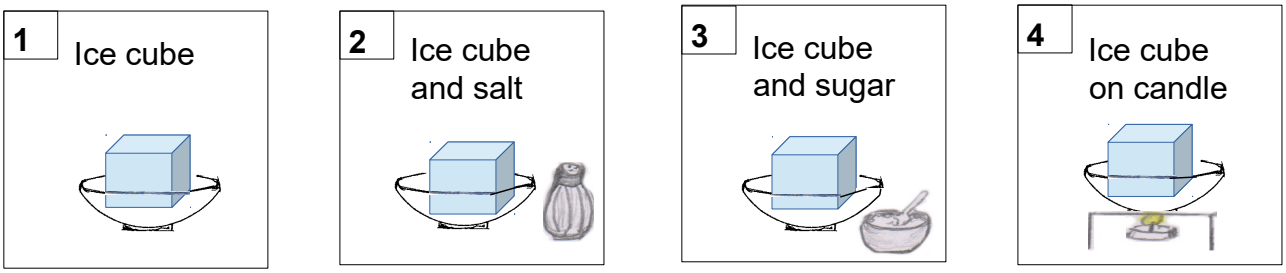
**Station 6** **STEM FOR ALL SEASONS** **Name:**_____

# Water, ice and melting pot

## Experiment 1: Which ice cube melts the fastest?




**Assumption:** ☐ ☐ ☐ ☐

**Observation:** ☐ ☐ ☐ ☐

I have also observed this:

_____

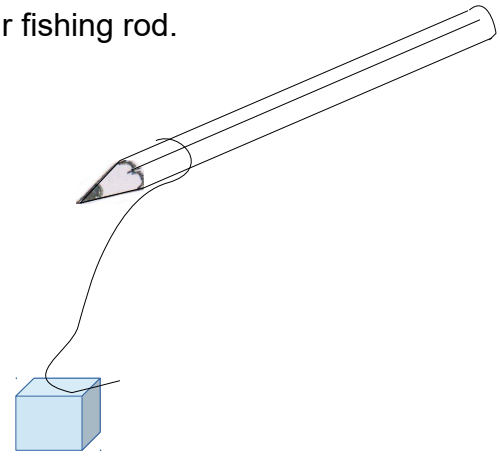
_____

_____

## Experiment 2: fishing an ice cube

Preparation: Tie a piece of thread to a pencil. This is your fishing rod.

Experiment:
Take an ice cube and put it in front of you on the plate.
Sprinkle some salt on top of your ice cube.
Put your fishing line on the salty spot of the ice cube
Wait a few minutes and then pull up the ice cube.



## Experiment 3: How cold is the water?

water + ice: _____ °C water + ice with salt: _____ °C

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**Explanations on the experiments**

### Experiment 1

Clearly, ice and snow melt as soon as it gets warm. (Figure 4).
But salt and sugar are not warm. Why is the ice thawing faster?
Here you have to know 2 things

1. On the surface of water ice is always a thin film of water
2. Look at **Experiment 3:**
   Water with salt has a lower freezing / melting point than pure water:

**salty water: to about - 21 ° C** **normal water: 0 ° C**

If you put salt on the ice, it dissolves in the ultra-thin water film. Now you have salt water. Salt water has a much lower freezing point than normal water. It can not freeze again. On your ice cubes, however, a new thin film of molten ice is formed. The more water, the more salt can be dissolved.
This goes on until there is no ice or salt left.

* Salt for the roads in the winter is by the way "dirty dining salt". It is not as clean as the salt we use in the kitchen to flavor the food. For this it is much cheaper and fulfills in the fight against smooth roads the same purpose. However, salt is not at all good for the environment and the soil.

### Experiment 2

If you look at the ice cube and the thread more closely, you can see that the thread is frozen on the ice cube.
As you know, salt dissolves in water. If you put salt on ice, it lowers the melting point of the ice.
Normally, ice only melts at 0 ° C. If you put salt on it, the ice melts, e.g. Even at -1 ° C.
If the ice cube melt, the salt water is diluted. This increases the melting point again. Now the water freezes again to ice. Since the thread was lying in this salt water, it then freezes.

If you now pull the thread, you'll get the whole cube!

### Experiment 3

Think about it:
Does it make sense to spread salt in the area with - 40 ° C on the roads to free them from the ice?

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You would like to read more about this topic? These pages will help you:

http://kids.t-online.de/warum-salz-gegen-glatte-strassen-hilft/id_43543554/index

http://www.kids-and-science.de/kinderfragen/detailansicht/datum/2009/10/16/warum-taut-eis-durch-salz.htm

http://www.physikforkids.de/lab1/versuche/eisangeln/eisangeln_wfd.html

http://www.schule-und-familie.de/experimente/experimente-mit-wasser/eiswuerfel-turm.html