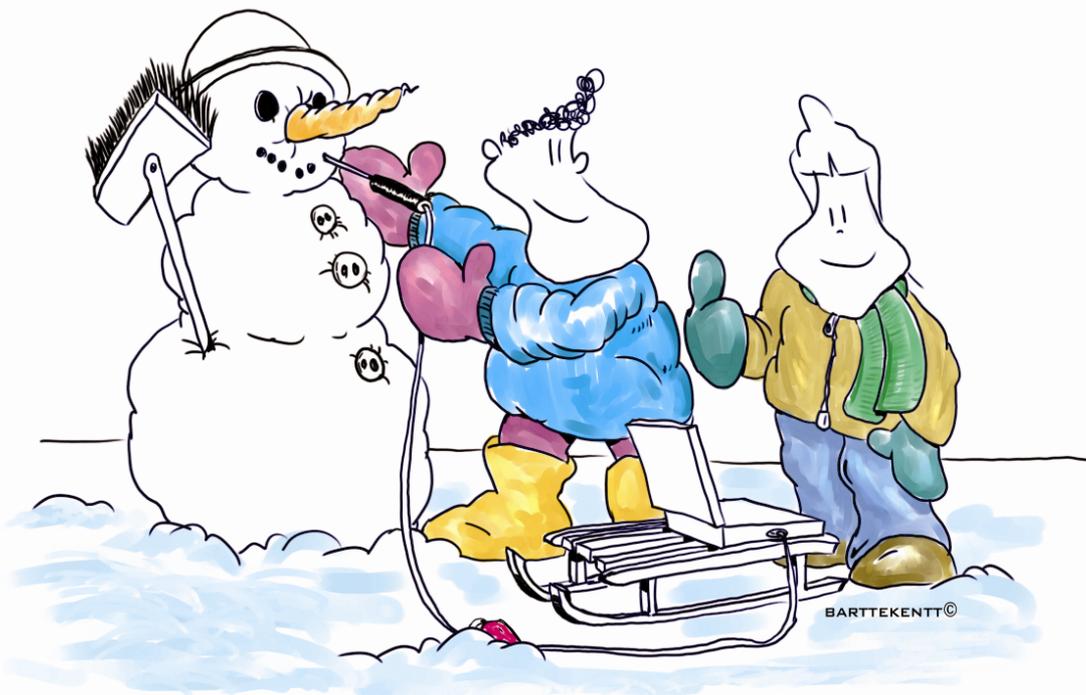


VII. Melting

Key Question: What is the temperature of melting ice?



Student name:

Class:



Activity 1 – Melting substances

1. Imagine the following experiment.

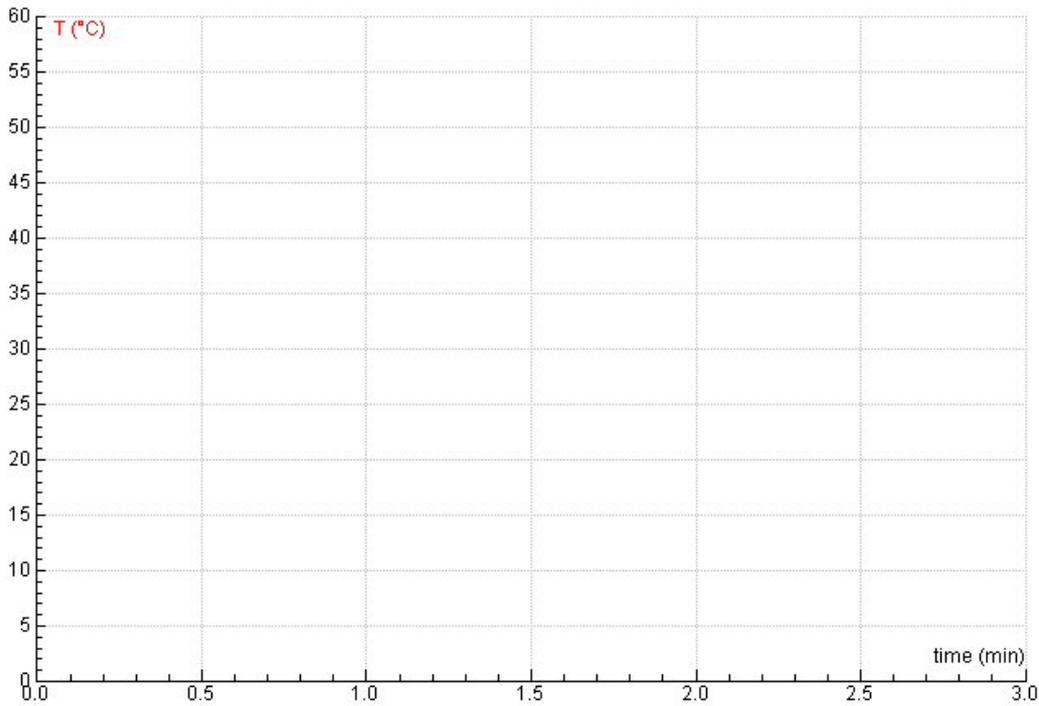
You put a substance into a plastic bag; you close the bag and lower the bag into hot water. Predict what will happen?

A SUBSTANCE IN A PLASTIC BAG	IN HOT WATER IT WILL ...
Butter	
Clay	
Chocolate	

2. Imagine you put an ice cube into a beaker with lukewarm water.
What do you think will happen to the ice cube?

3. What do you think will happen to the temperature of the water?

- Fill a beaker about half full with lukewarm water and measure the water temperature.
- Predict what will happen to the water temperature when you will add an ice cube into it. Draw your prediction in the graph on the next page.



- Now you are going to check your prediction. Put the temperature sensor into the water and start your measurement.
- Add one ice cube to the water. Gently stir the water with the sensor. In the table below write the temperature value when the ice cube is completely melted.
- When this cube is melted immediately add another ice cube, and continue stirring.
- Again write the temperature when the second ice cube is melted.

ICE CUBE NUMBER	BEGIN TEMPERATURE (°C)	END TEMPERATURE (°C)	TIME (S)
1			
2			

4. Which of the cubes melted the fastest?

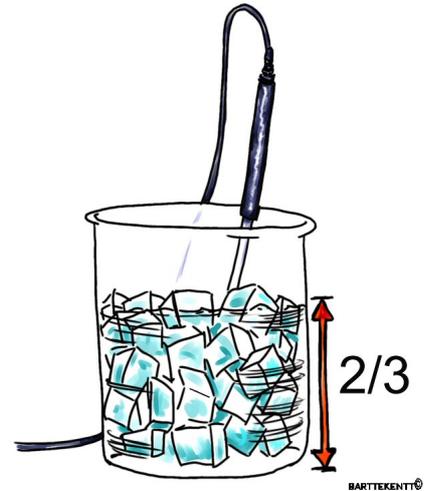
5. Why did it take longer for one of the ice cubes to melt?

6. Do you think that if you put an ice cube in hot water it will melt at a different rate than if you put in the colder water?

Activity 2 – Ice cold water

Now you will repeat the experiment but you will use many more ice cubes and you will make ice cold water.

- Fill a beaker about $\frac{1}{3}$ full with room temperature water.
- Put the temperature sensor into the water and start your measurement.
- First measure the temperature of the water for a few seconds. Then add the ice cubes into the water. Use enough ice to bring the water level up to $\frac{2}{3}$ full. Stir carefully.



7. What happened to the temperature of the water as you added ice?

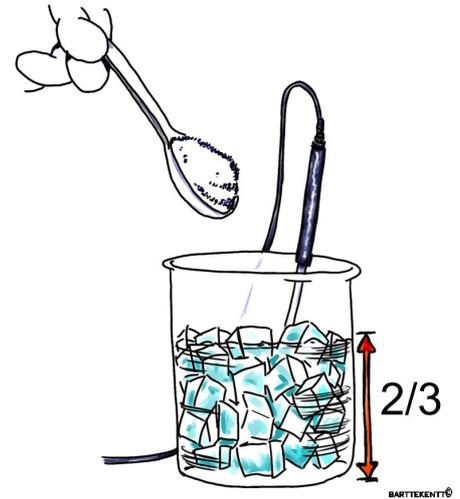
8. What is the temperature of ice cold water?

9. What do you think would happen if you continue to add ice cubes to the water? Will the temperature ever drop below zero degrees C°?

Activity 3 – Can you make ice water even colder?

- Repeat the previous experiment but now after two minutes add 2 spoons of salt.
- Stir the mixture carefully.

10. What happened to the temperature of the ice water when you added salt?



11. What is the temperature of ice water with salt?

12. What could you do to drop the temperature even more?

- Investigate if other substances like sugar have the same influence of temperature of melting ice.

Questions

- A.** Check what will happen to the temperature of ice water when you add other things like sand or sugar instead of salt. Write down your findings.

- B.** Do you know why people put salt and sand on the roads in winter?