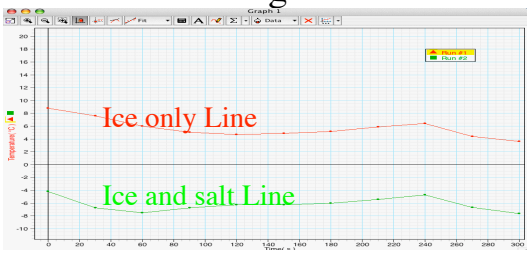
It's Freezing Discussion



1. What happened after you added the salt to the ice? Was the temperature above or below the ice only?
2. What is the only factor that could have caused the changes shown in question 1? What does this tell you about the freezing point temperature of salt water compared to fresh water?

Use page 260 to give explanation.

3. Heat energy is needed to change phase from a solid to a liquid. List the possible sources of the heat needed for this phase change in your beaker.

Use page 260 to give explanation.

4. Explain how we could use the information we found out about temperature changes in salt water in this experiment to make ice cream.
5. In the radiator of your car you put a combination of antifreeze and water to keep your car engine cool in the summer and prevent the radiator from freezing in the winter. Explain how you think this works in terms of what you saw in the experiment you just did.

Use page 261 to give explanation.

It's Freezing!

Name: _____
Per: ____ Date: _____
Assign. No. _____

Problem: Does the addition of salt make the temperature of ice go up or down?

Information: Salt is used to melt ice on roads. Melting is **endothermic**, it takes heat to cause water molecules to break out of their fixed positions in the ice.

Hypothesis: (make an intelligent prediction as to the answer to the problem BEFORE experiment. Include your reasoning.)

Procedure: (click "setup" button to change sample period to 30 seconds)

1. Use set up menu to record temp every 30 sec. (setup menu)
2. Place a thermometer in the center of a beaker 3/4 filled with ice only.
3. Wait 1 minute. Click start. Run for 5 min. (300 seconds) Click Stop.
4. Sprinkle 1 tsp salt spread over ice in the beaker. Repeat step 3 above.
5. Use "Scale-to-fit" button to resize graph. Click "Table" button and record data below

Data:

scale to fit

table

Time in seconds	Temp °C Without NaCl (salt)	Temp °C With NaCl (salt) added
0		
30		
60		
90		
120		
150		
180		
210		
240		
270		
300		

Data Analysis:

Watch sign! (negative or positive)

Temperature Change			
Ice only		Ice + salt	
Final Temp		Final Temp	
Starting temp (time 0)		Starting temp (time 0)	
Temperature change		Temperature change	