

Science Experiment

Does adding salt affect the freezing point of water?

Aim: To determine whether salt will either lower, raise or simply have no affect on the freezing point of normal tap water. To also determine how much salt is need to change the freezing point by 5 degrees lower or higher if the freezing point does change.

Hypothesis: The more salt added into the water, the density of the water will be increased because salt weighs more than water. Therefore, the water will have a lower freezing point.

Apparatus (equipment)

- Salt
- 4 Cups
- Water
- Measuring Cup
- Freezer which is abel to change temperature.
- Labels

Independent: the difference in each cup is the amount of salt added to the water. **Dependent:** The experiment requires to measure when the salt-water solutions freeze. **Control:** The similarity of each solution is the amount water in each cup, which is 100mL.

Risk Assessment:

Risk	Safety
Spillage of water on the floor causing people to slip and fall	Keep water at the centre of work area, clean all messes if they occur.
Salt can go in eyes or wounds, causing pains	Wear safety goggles.
Can drink salt solution, causing slight choking and dehydration.	Add labels on cups so people wont get confused
Making a mess, causing parents to get mad and yell	Keep equipment at the centre of the bench. Do experiment when they are not home

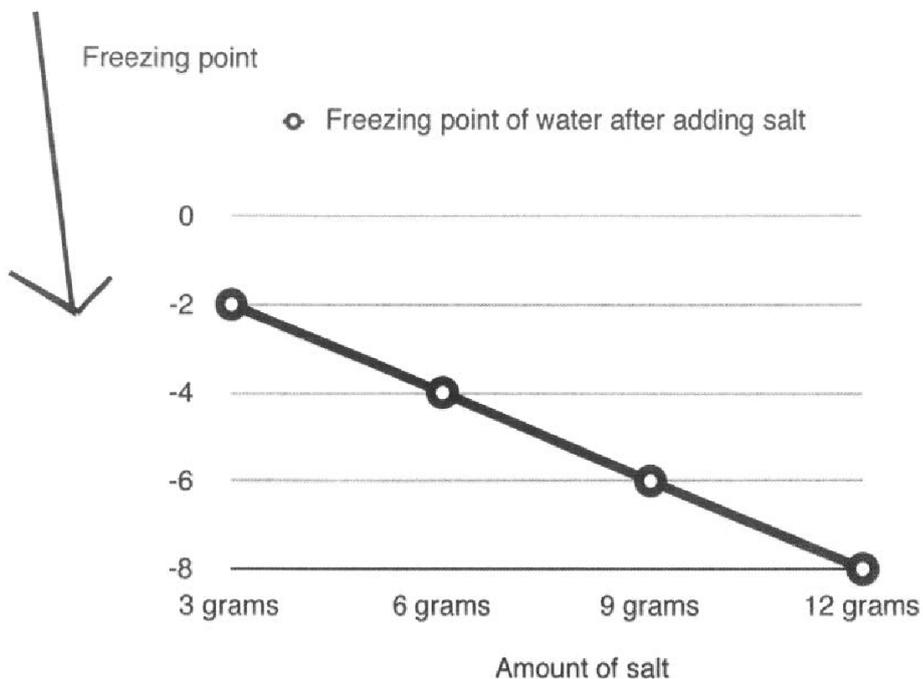
Formulated an appropriate statement of the problem to be investigated. However, an aim is irrelevant in this type of investigation.

Evidence of some research about the scientific explanation of changes in state would enable a more appropriate hypothesis to be formulated.

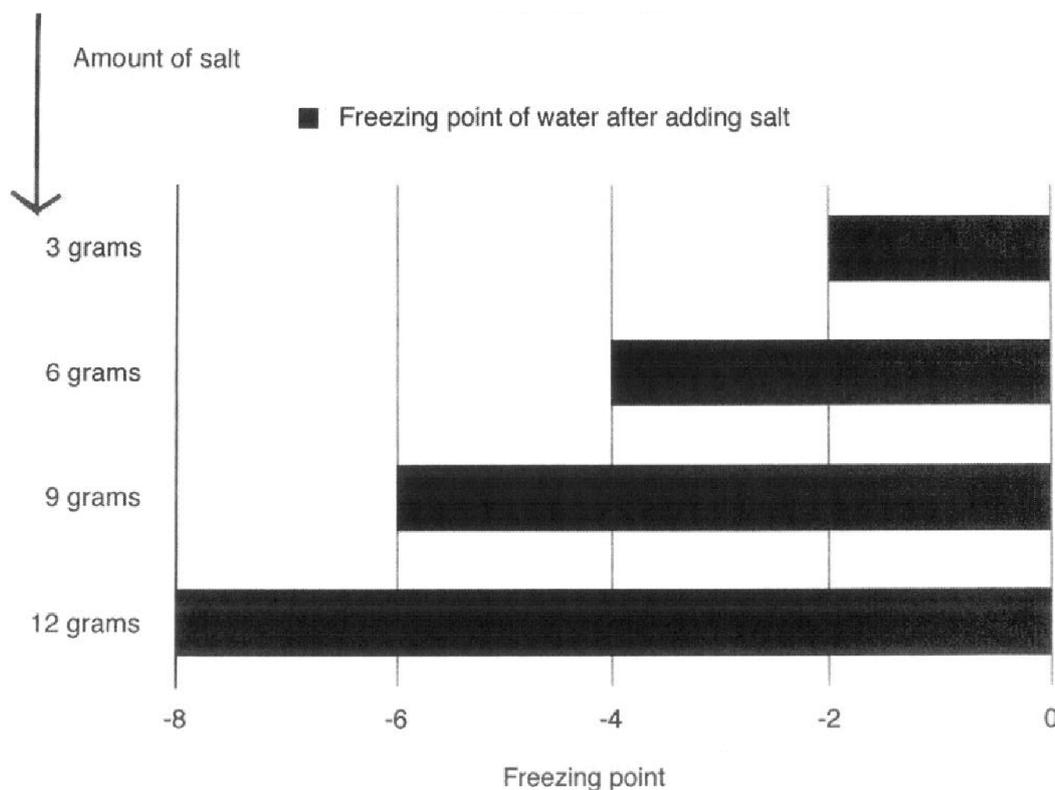
Method:

1. Add labels to 4 cups, stating if the cup contains 3, 6, 9 or 12 grams of salt.
2. Use the measuring cup to pour 100mL of water into each of the 4 cups.
3. Pour 3 grams of salt into the cup with the label 'Contains 3 grams of salt'.
4. Pour 6 grams of salt into the cup with the label 'Contains 6 grams of salt'.
5. Pour 9 grams of salt into the cup with the label 'Contains 9 grams of salt'.
6. Pour 12 grams of salt into the cup with the label 'Contains 12 grams of salt'.
7. Start to cool each of the solutions one by one using the freezer and cooling the temperature every 1 minute.
8. Record results.
9. Repeat experiment 4 times for accurate results.

A very detailed method with clear use of quantities. This could be improved by stating the size and material of the cups as this could have some impact on the validity of the results.



This line graph is the more appropriate graph because it clearly demonstrates the trend caused by the addition of salt to the freezing of water.



Bibliography:

(background information)

<http://wiki.answers.com/Q/>

[Why_does_salt_decrease_the_freezing_point_of_water](http://www.worsleyschool.net/sciencefiles/saltandfreezing/ofwater.html)

<http://www.worsleyschool.net/sciencefiles/saltandfreezing/ofwater.html>

http://www.ehow.com/about_6512742_adding-water-lower-freezing-point.html

[http://uk.answers.yahoo.com/question/index?qid-](http://uk.answers.yahoo.com/question/index?qid-20061005012100AASyFTS)

20061005012100AASyFTS (a similar good experiment)

<http://prezi.com/ehobfcgkjbOe/science-fair-freeze-salt-sugar-are-here/>

Grade Commentary

Jude has a sound knowledge of planning and safely conducting a scientific investigation but has demonstrated a limited ability to identify variables. However, Jude is able to present the data in a graphic form. Inclusion of a discussion explaining or analysing the results and a conclusion would have enhanced the report. This work sample demonstrates characteristics of work typically produced by a student performing at grade D standard.