

Radioactive Frosty

Summary

Students will use melting snow to create a graph showing the "decay" of the snow in Frosty the Snowman. They will solve the mystery of how long Frosty has been decomposing.

Main Core Tie

Science - Chemistry

[Standard 2 Objective 2](#)

Time Frame

1 class periods of 90 minutes each

Group Size

Small Groups

Materials

- [student sheet](#)
(attached)
- Snow (ice cubes can be used)
- per group:
 - Large funnel
 - ring stand
 - ring
 - 100 mL graduated cylinder
 - stop watch or timer

Note: Extra materials will be needed for student experiment.

Background for Teachers

Time needed:

90 minutes, another activity may be needed to fill some of the melting time. (maybe [Frosty the Snowman](#) on YouTube.)

Student Prior Knowledge

Students would need to have had experience graphing decay curves and know that they are based on the amount of parent element compared to daughter elements over time.

Instructional Procedures

Handout the student sheet and read the situation. Make sure the students make the link between the snow and water and a radioactive element and its daughter element.

Allow the students time to work in their groups to design a procedure to discover when the snow was brought into the room.

When students have a plan, allow them to begin their experiment.

Assessment Plan

Scoring Guide:

1. Students measure mass of water and snow to determine Frosty's current condition..4
2. Students design a plan to measure the rate of snow melt in the room.4
3. Students graph the results and have enough points to see a curve.4
4. Analysis questions are correctly answered:
 - Units should be grams/minute
 - Mass is the most logical.
 - Keep track of when the snow or ice was brought in.
 - Answers on graph should match data.
 - Carbon 14 and the snow are changing into Carbon 12 or water

Bibliography

Lesson Design by Jordan School District Teachers and Staff.

Authors

[Utah LessonPlans](#)