



Water Content in Snow

GRADES 7 - 8

LESSON DESCRIPTION

This interactive activity will prompt your students to analyze different snow samples and determine the amount of water in each sample. Students calculate the mass and density of snow in comparison to water, extrapolating the class findings to determine which type of snow contains the most water.

SUGGESTED CURRICULUM LINKS

Science: 7-2-03, 7-2-04, 7-2-05, 7-2-06, 7-2-07, 8-3-02, 8-3-07

OTHER RESOURCES

[Snow depth/cover in North America](#)

LESSON

Students will collect snow samples and find out how much water there is in the snow.

Materials

- Clear sampling containers (measure volume and weight) with lids
- Digital scale
- Small shovels or serving spoons

Procedure

Before heading outside:

- Split class into groups, and set boundaries for where you are going to extract your samples before you head outside.
- Assign groups to take samples from the top, middle and bottom of a snowbank in different areas on the schoolyard. Focus on areas that are very different in degree of snow pack (middle of field, snow left by plow, along footpath, in shrubs).
- Have students label their sampling containers with waterproof labels, and record the weight of their containers.



Outside:

- Dig with spoons or shovels to collect snow samples, being sure to fill containers to the top with no air space but not packed down.
- Measure the snow depth in your sample areas with rulers.

Return inside:

- Have students weigh their samples and record mass as well as information about the snow's texture.
- Allow snow to melt in containers to visually compare water content.

- Have all groups share their data. Discuss why there is variation. Where in the snowpack does the snow seem to be the most dense (top, middle, bottom)? The looser snow at the bottom of the snowbank is known as pukak snow in Inuktitut, and is used as shelter by many animals such as voles and ermine. Heat trapped next to the ground will keep these animals warm all winter long.
- Calculate snow density and the water content of the snow. Why would we want to know how much water is in the snow? This affects the prediction of floods, which is a very important thing to know in Manitoba. You could extend the volume calculation by estimating average snow depth and total area of your schoolyard to estimate how much water will be on the surface when the snow melts in spring.

Calculation Sheet

How Much Water is in this Snow?

- A. Mass of empty sample container _____ g
- B. Mass of sample container with snow in it _____ g
- C. Mass of just the snow (A-B) _____ g
- D. Volume of sample container _____ mL (cm³)
- E. Snow Density (Mass (C) ÷ Volume (D)) _____ g/cm³
- F. Water Content (%) (Density (E) x 100) _____ %