

# Glacial Pressure

Background Information: In some regions of the world great masses of snow and ice cover the earth's surface. In these areas, where more snow falls each year than melts, the snow accumulates, often forming thicknesses of up to 1 mile. Then, in much the same way that a snowball, when pressed between a person's hands, turns to a ball of ice, the weight of the upper layers of snow exerts pressure on the lower layers to cause the formation of a heavily compacted layer of ice at the bottom. It is this ice layer beneath the snow that becomes a river of ice, known as a glacier.

## Objectives

- Students will observe the effect of pressure exerted on marshmallows.
- Students will draw conclusions about pressure exerted on snow.

## Materials

- A cleaned-out olive jar
- Five or six marshmallows
- A cardboard disc of slightly smaller diameter than that of the jar
- Several small, heavy weights

## Procedures

1. Place five or six marshmallows inside an olive jar to form a vertical stack.
2. Place a cardboard disc on top of the stack of marshmallows.
3. Place a weight on top of the disc and observe what happens.
4. Add additional weights and observe the effect that is produced.
5. Discuss with other members of your group what happened to the marshmallows when pressure was applied from above:  
  
Is there evidence that the marshmallows spread outward?  
Is there evidence that the marshmallows stick together and solidify when they are compressed?  
What would have happened if the sides of the jar had not been there to hold the marshmallows within the jar?  
If the marshmallows had been snow, what form would they have assumed as a result of the pressure applied from above?
6. Then, recall a snowball fight in which you engaged and describe how you converted a snowball to an iceball.
7. Write a paragraph explaining how this activity illustrates the process by which glaciers are formed.

Excerpted from *Hands-On Science Activities*.

A hands-on science activity will help students to understand the effects of pressure exerted on snow and the forming of glaciers.

<b>GRADES</b>	3   4   5   6
<b>SUBJECTS</b>	Arctic and Polar Regions Weather Seasons Winter Season Habitats and Ecosystems Ecology Biology Science Earth Science Glaciers Geology