

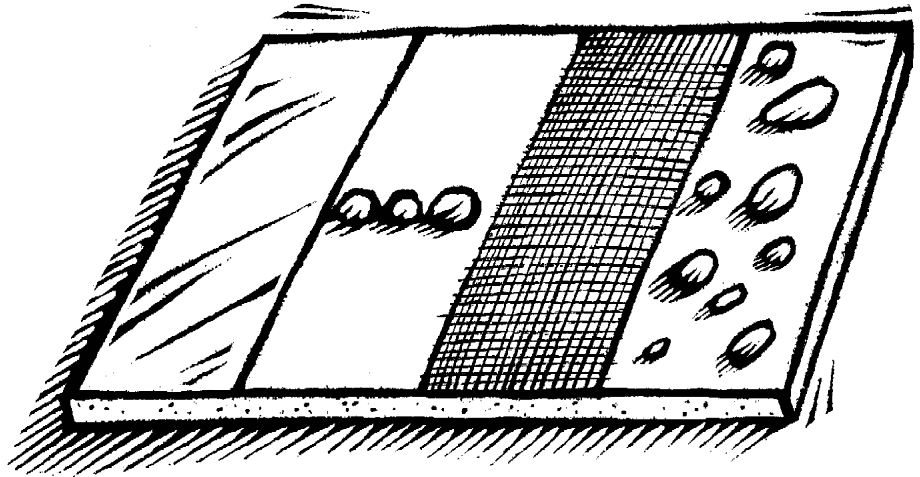
Slip Sliding Away

As a snowpack forms over several days, weeks, or months, layers of snow are deposited one onto another. The kind of snow, the incline of the slope, and the terrain all play a role in when and where avalanches will occur. In this activity, you will model how a snowpack might form over several months and then cause your own avalanches.



Materials for each team

- prepared Foam Board Model
- 16 oz. granulated sugar
- 5 lb. flour
- 8 oz. mashed potato flakes
- protractor
- newspaper



Part I

1 When examining the foam board, predict how you would expect "snow" to behave on each of the four surfaces: **acetate**, **plain foam board**, **burlap**, and **rocky**. On which surface(s) would you expect to see snow slide at a low incline? On which surface(s) would you expect snow to slide at a moderate or high incline? Why?

2 Spread newspapers under your Foam Board Model before you begin creating your snowpack. Now start laying down your first winter snowfall. Early on in the season light snow will cover the area. To model this, shake a coating of granulated sugar over the entire surface.

3 Next, winter storms dump lots of heavy snow on the mountainside. Then wind blows the snow around, breaking it into smaller crystals and depositing a dense layer. To simulate this, cover the granulated sugar layer with half your amount of flour. Pat down the flour and even out the surface.

4 A long cold spell comes along. More light snow falls onto the hillside. Model this with the potato flakes, evenly distributing a light layer on top of the flour.

5 Finally, another huge winter storm hits, followed by more wind. Simulate this by using the remaining amount of flour to cover the potato flakes layer. When you are finished, pat down the flour and even out the surface.

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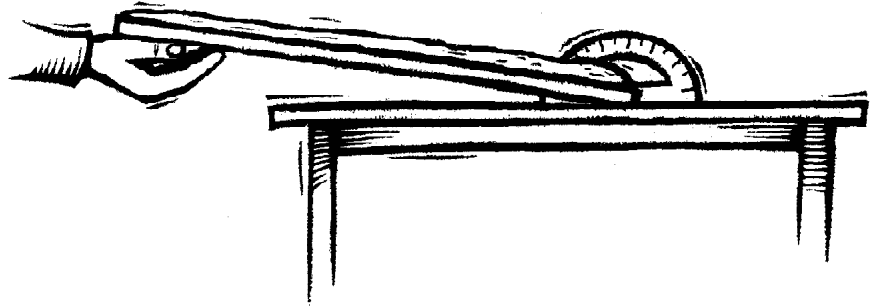


Part II

1 Now you are ready to simulate your avalanche. Place additional newspaper near the board to catch the sliding snow.

2 Before inclining the board:

- You will need to measure the angle at which the avalanche begins. To do so, have one member of your team line up the protractor with the edge of the board to record the angle of incline. When the board is inclined, another team member will read numbers off the protractor.
- You will need to have team members choose which areas each will watch for cracks and snow releases in the snowpack. If you incline the board too quickly, you may miss several smaller avalanches and will have missed data to collect.



3 Slowly incline the board. As the incline increases, record your observations and complete the chart below for each snow release.

Surface and degree of incline at which snow slid	Description of avalanche	Why snowpack slid
for example: 20° INCLINE SNOW ON SLICK SURFACE SLID	TOP LAYER OF FLOUR BROKE LOOSE LIKE A SLAB, AND THEN WHOLE SNOWPACK SLID.	SLID BECAUSE ANGLE OF INCLINE INCREASED AND THERE WERE NO ANCHORS FOR SNOW.

Questions

Write your answers on a separate sheet of paper.

- For each section, at what angle did the snow begin to slide? In nature, avalanches are most common at slopes of 35 to 40 degrees. Why might it be unlikely for snow to avalanche on very steep or very gentle slopes?
- How did the rocks on the slopes affect the avalanches? Why?
- For each section, did all of the layers in the snowpack slide at the same time or separately? Describe how the surface upon which the snowpack rested affected the way layers slid.
- Based on this model, what generalizations might you make about how slope, terrain, and layers within the snowpack affect avalanches that occur in nature?