Station #1 - Weather measurements help us predict and prepare

The National Weather Service uses weather stations with instruments like these to collect temperature and snowfall information from around the country. We use this information to know when it is safe to spend time outdoors and to know how to prepare and dress for outdoor activities.

. . . .

1. Current temperature = _____ $^{\circ}$F _____ $^{\circ}$C

2. Minimum temperature last 24 hours = _____ $^{\circ}$F

3. Maximum temperature last 24 hours = _____ $^{\circ}$F

4. Wind speed= _____ mph

5. Using the current temperature (#1) and wind speed (#4) you can determine how cold it feels to your body. This is called the wind chill.

Wind chill= _____ $^{\circ}$F

6. Snow pack is the depth of snow that is on the ground. It has been accumulating all season.

Snow pack = _____ inches

Station #2 - What is snow?

5. The ice crystal grows six branches.

4. As it rises, it cools and freezes into an ice crystal.

3. The droplet grows.

6. The crystal grows heavier and begins to fall.

2. Water vapor condenses on the dust forming a droplet.

7. The crystals fall out of the clouds and clump together as they hit warmer air forming snow-flakes.

1. There are dust particles in the air.
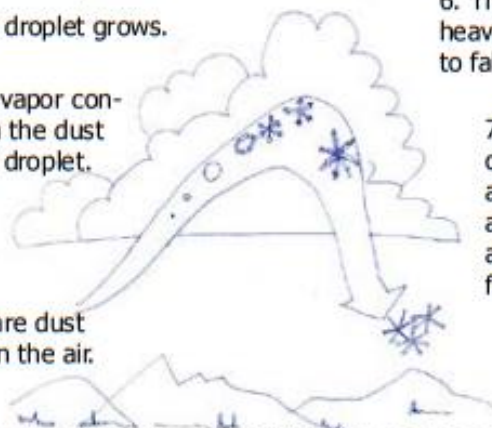
1. Use the magnifying glasses to look closely at one snow-flake (placing it on a dark background helps).

2. Compare your snowflake to the pictures on the classification chart.

3. Draw 3 different snowflakes you observed.

Snowflake #1

Snowflake #2

Snowflake #3

Did you know?
When you breathe, you're adding moisture to the air?

Station #3 - Snow is our drinking water source

Rangers in Glacier National Park have been conducting snow surveys for over 80 years. The amount of water in the snow pack is important to people since when the snow melts, it flows into the rivers, streams and down into the ground. It's the water we use for our drinking water!

By measuring the amount of water in the snow pack throughout northwest Montana during the winter, resource managers can predict how much water will be available in the summer for crops, livestock, residents, and businesses. Try it!

. . . .

Take turns getting snow weight measurements to find the snow water equivalent (SWE). This is the amount of water that would cover the ground if all the snow melted right now.

1. Weight of snow = [   ] g

2. Weight of snow ÷ size of cutter = Water in each 1 cm of snow

[   ] g ÷ 1000 cm^3 = [   ]

3. Water in each 1 cm of snow X height of snow = SWE

[   ] X [   ] cm = [   ] cm

Why should we care how much water is in the snow?

_____

Station #4 - The changing snow pack

Snowflakes on the ground are constantly changing shape because of the temperature, wind, and weight of more snow. The earth naturally gives off heat. This warms the bottom layer of snow and causes the snow crystals next to the ground to grow larger and fit more loosely together.

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1. Slide the card through the snow in a line from the top of the snow pit all the way to the bottom.

2. Each time you feel the snow change (get harder, become icy, or get softer) mark it with a popsicle stick. Draw a line across the box below for each stick layer in your table.

Your Snow Pit Profile:

Top

Bottom
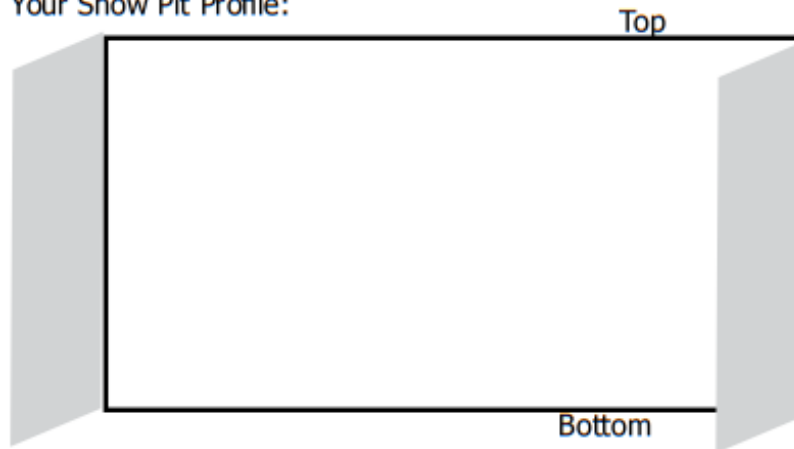
4. How could the changing snowpack affect animals? _____

_____

_____

_____.

Station #5 - Snow and insulation

For many small mammals and insects, the presence of snow cover is very important to their overwintering success. This is because snow is a good insulator - it holds in heat. People have also used the insulating properties of snow to keep warm by building snow shelters.

. . . .

1. Air temperature outside the igloo = _____ ^{o}F

2. Air temperature inside when you enter = _____ ^{o}F

3. Stay inside and read the story pages from <u>Who Lives Under the Snow?</u> When you're finished, measure the temperature inside the igloo again.

Air temperature inside (after story) = _____ ^{o}F

4. How did all the temperatures compare?

_____

_____

6. What do you think caused the differences?

_____

Did you know?
Scientists have found that with 16-20 inches of snowpack, the temperature at the bottom of the snow (subnivean environment) stays almost a constant temperature, around 32 ^{o}F. Why should we care how much water is in the snow?

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