



A Mountain Experience Answer Sheet

Make your trip to the mountains a learning experience in every aspect of study at school. Relating learning to real-life activities will help children remember facts and figures. If information becomes “personal,” it generally peaks interest and holds children’s attention better than information that is seemingly meaningless.

Weather (beginning on page 4)

- 1) Look for your city elevation and destination elevation on page 13.
 - a. If I am going to Snowbird from SLC, the difference in elevation between school and the base of the mountain is 3900 feet.
 - b. It will be approximately 13.6 degrees colder at the bottom of Snowbird than it is at school. If it’s 40 degrees at school, it will be 26.35 degrees at the base of the Snowbird.
 - c. It will be 15.85 degrees at the top of the mountain.
 - d. Look at the local paper or the Internet to help you predict several days of temperatures at school and at the mountain.
 - e. Discuss what you should wear when it’s 13+ degrees colder at the mountain. Dress in layers. Have a base layer (long underwear), middle layers (shirts and sweaters) and a top layer (jacket). Wear waterproof mittens over thin gloves. Always wear a hat. It can go into a pocket if it’s warm. Wear one mid-weight pair of thermal socks. Avoid cotton if possible.

Snowbird base elevation = 8100 feet

SLC elevation = 4200 feet

Difference in elevation = 3900 feet

3900 feet divided by 1000 feet = 3.9 (temperature drops 3.5 degrees for every 1000 feet)

$3.9 \times 3.5 = 13.65$ degrees (round off if decimals are too difficult)

$40 \text{ degrees} - 13.65 \text{ degrees} = 26.35 \text{ degrees}$

Snowbird peak elevation = 11000 feet

SLC elevation = 4200 feet

Difference in elevation = 6900 feet

$6900 \text{ divided by } 1000 = 6.9$

$$6.9 \times 3.5 = 24.15$$
$$40 \text{ degrees} - 24.15 = 15.85 \text{ degrees}$$

- 2) Look at the cloud chart and observe the clouds at school and over the mountains.
 - a. Yesterday, at my house, there were storm clouds from early morning on.
 - b. They were very low.
 - c. They were very gray.
 - d. It looked like a storm would hit sometime soon. It rained a little during the day, and a huge thunderstorm rolled in with wind and heavy rain at about 5:30 PM.
 - e. Clouds over the mountains were puffier, darker and very low.
 - f. I did see a slight "sundog" on Sat. PM.
 - g. Repeat this process for several days.

- 3) The wind scale is in the appendix. Look up the closest temperature and wind speed and read the chart.
 - a. Monday at my house was very windy. Flags flew straight and umbrellas would turn inside out. Winds were about 25 mph.
 - b. If it's 40 degrees at school, then it will feel like 29 degrees with a 25 mph wind. If it's 26 degrees at the bottom of the mountain, the wind will make it feel like approximately 9 degrees.
 - c. Observe winds for several days. If winds are out of the south for two to three days before this trip, chances are you will see a storm close to the ski trip.

- 4) Water cycle (see page 2 for facts).
 - a. When warm air hits the mountains, it generally rains or snows (see page 2 for facts).
 - b. If it's below freezing, the precipitation is snow. If it's above freezing, the precipitation is rain.

- 5) Man-made snow (see page 3 for facts)
 - a. Air and water.
 - b. Yes. Add more water for heavier snow and more air for lighter snow.
 - c. Man-made snow has a compact six-sided crystal with less air, so the snow packs more densely.
 - d. Since the temperature at the resort is often 13-25 degrees cooler than the valley, ski resorts can still make snow when it's above freezing in the valley.
 - e. Sometimes, if the air is dry, the resorts can make snow when it's above freezing.
 - f. Resorts on the leeward side of the Wasatch Mountains tend to be drier and get a little less snow than the windward side. That's because the storms often hit the windward side first, dropping

much of the moisture there in the Cottonwood Canyons. Park City, on the leeward side, still gets plenty of snow, but not as much as Alta, or Brighton.

- g. To predict the snowmaking forecast, simply do the math. Find the temperature in the city, look at the elevation differences and find the temperature at the mountain. If it's above freezing at the mountain, they most likely cannot make snow.
- h. Man-made snow goes back into the water cycle the same way that regular snow does. It came from water source in the first place and it goes back into the ground and the water source when it melts.

Environment (beginning on page 8)

- 1) Read page 7 and color the map in the appendix.
 - a. Ski resorts are in the mountain forest environment.
 - b. Mule deer, coyote, moose, cottontail rabbit, and red fox are some of the animals you may see. You may also see porcupines. Look for them in pine or fir trees where the bark has been stripped off. Occasionally, you'll see an ermine, or a weasel that has changed colors for the winter season. It's now white.
 - c. Actually, the trees and animals at Brian Head will be very similar to all the other mountain resorts. However, you will see more Pinyon Pine, and Utah Juniper in the elevations below the resort.
 - d. Fir trees have needles that grow singly. Pine trees have needles that grow in bunches of two, three or five needles (you'll need to look at the tree boxes in the appendix to answer this question).
 - e. Leafy plants go dormant for the winter. Some animals grow thicker fur or the fur changes color to match the snow. Other animals such as chipmunks, squirrels and mice hibernate for the winter.
 - f. Look for trees at the resort and identify them.
- 2) Turn off the game boys and I-pods on the ride up to the mountain and watch for changes in the environment.
 - a. Look for Cottonwood trees, and Willows in stream bottoms. At mid-elevations, south and west-facing slopes have more Gambel Oak and fewer trees in general. North and east -facing slopes have more firs, pines and aspens and maples. This is a mixed evergreen and deciduous forest found at 5000-8000 feet.
 - b. As you go higher, the mixed forests of north and east facing slopes give way to primarily evergreen or coniferous forests of Douglas fir, Englemann spruce, and pines. You'll also find stands of "Quakies," or Quaking aspens, a deciduous tree at higher elevations.
 - c. The "red" trees are dead coniferous/evergreens. They have succumbed to beetle and bug kills throughout the Wasatch forest. Weak and old trees cannot survive the bugs and die off. Hence, their branches and needles look brownish-red.

Rocks And Mineral (beginning on page 10)

- 1) Read the information on page 9.
 - a. Sandstone is very porous rock and prone to bleaching and erosion. Sandstone often contains iron (that's what creates the Red-Rock country in Southern Utah) and it gives it a reddish tint.
 - b. Rock climbers like granite. Big and Little Cottonwood Canyons are famous rock climbing destinations although you will find granite all over northern Utah. Most of the rock in Southern Utah is sedimentary rock.

- c. Look for brochures from the Forest Service to help you identify rock in the various canyons. Snowbasin has a nature center on the first floor of the lodge. Be sure to visit with your classes before leaving this resort

2) Mining

- a. Gold, silver, lead, zinc and copper were mined in the mountains of Utah.
- b. The Cottonwood Canyons received more snow and are steeper than the mountains on the Park City side.
- c. For example: The Spiro Tunnel was part of the mining operations in Park City.

3) Glaciers

- a. Glaciers form U-shaped canyons and water forms V-shaped canyons. The glacier stopped at the bottom of Little Cottonwood, but it stopped at Reynolds Flats in Big Cottonwood, just below Solitude.
- b. Find out how the canyon you will travel for the ski trip was formed. Call the Forest Service office in your city.

4) Southern Utah

- a. The cliffs and plateaus are a reddish-brown color.
- b. They are red due to iron deposits.
- c. It's primarily sedimentary rock. It's porous and very prone to erosion. Hence, incredibly weird shapes often form in the rock. Look at pictures of Bryce Canyon.

5) Stump the Instructor

- a. It's used for water storage and snowmaking!
- b. It was the Spiro Tunnel before the resort had chairs. People rode up the mountain in mining cars.

Math Skills (page 12)

1) Terrain

- a. About 600 acres are for beginner skiers ($900 + 700 = 1600$; $2200 - 1600 = 600$)
- b. About 1375 acres are for beginner skiers ($1550 + 575 = 2125$; $3500 - 2125 = 1375$)

2) Uphill capacity

- a. $3 \times 29 = 87$ people.
- b. $4 \times 100 = 400$ people when full; $.5 \times 400 = 200$ people when half full.
- c. 1500 divided by $300 = 5$ minutes to the top.
- d. It takes 10 minutes for a round trip. 60 divided by $10 = 6$ or each chair goes to the top 6 times in one hour.
- e. $60 \times 24 = 1440$ people, the uphill capacity of the chair per hour
- f. Watch the snow depths climb through the fall and winter by checking the Internet.

Note: there is also math involved in determining temperatures at the mountain.