

Answer Key

Avalanches & Slide Paths

1. Two words that you feel describe an avalanche slide path are: _____ , _____ **(up to students)**
2. T / F Avalanche paths affect major transportation routes in British Columbia. **T - including Highway 1 (Trans-Canada), Highway 3, Highway 16 and Highway 5**
3. T / F The Trans-Canada Highway runs through Rogers Pass, BC. **T (Rogers Pass is in Glacier National Park)**
4. **A snowshed** is something that protects transportation routes through Rogers Pass. **T - Five snowsheds exist on Highway 1 through Glacier National Park** The answer-key says that it's a T/F and a fill in the blank... I just put a fill in the blank...

Avalanches as Obstacles to Transportation

1. More than _____ avalanche paths affect public roads in Canada. **(1400)**
2. List four types of transportation that avalanches can be obstacles to. _____ , _____ , _____ , _____ **motor vehicle, snow mobile, ski, rail**
3. Who provides avalanche training opportunities to the public? _____ **Canadian Avalanche Centre**
4. Avalanches are a concern for industry. T / F provide an example: _____ **T - mining (other correct answers could include but not limited to forestry, tourism, food)**

Observe:

1. The earliest recorded avalanche observations were in _____ (year) by Sykes in Rogers Pass. **1885**
2. These early observations of Sykes were done for the _____ **Canadian Pacific Railway**

3. Avalanche professionals record snow and avalanche data today. T / F
T - this information is put into the InfoEx and avalanche bulletin to help people using the backcountry and avalanche terrain make informed decisions

Avoid:

1. First Nations people had an understanding of avalanche activity in the mountains prior to contact and tried to help _____ understand and avoid this danger.

Settlers, Gold Rush Miners

2. The “loops” in the railway at the western entrance to Rogers Pass had two main purposes, these were: _____ and _____

Decrease avalanche hazards and decrease grade in the railway

3. The Connaught Tunnel was built in _____ to help avoid extreme _____ hazards.

1916, avalanche hazards

4. Why might the railway have abandoned the loops?

-tunnel was more efficient and completely protected a large section of rail from avalanches

-the terrible 1910 avalanches spurred the need for better avalanche safety along the rails

5. Why does the Canadian Avalanche Centre issue a daily avalanche bulletin?

-to provide the public with information on the avalanche hazard to help people make good, safe decisions in the backcountry regarding avalanche terrain

6. What has Parks Canada done to help backcountry recreationalists evaluate avalanche terrain?

-created avalanche terrain maps

7. List the different ways to avoid avalanche terrain.

Loops, tunnels, don't stop in it, don't go

Defend:

1. What is the purpose of the snowshed?

-to protect highways and railways from avalanches

2. Snowsheds are used to protect what two forms of transportation?

Vehicles and railway

Attack:

1. T / F Heli-bombing is not a versatile way of attacking avalanche areas.
F – Heli-bombing is very versatile way of attacking avalanche terrain
2. In order for heli-bombing to be effective, it requires what?
-daylight and adequate visibility
3. List some other ways to attack and stabilize avalanche areas. What do you think the pros and cons of each are?
-Heavy artillery via howitzer
-Avalanche Guard Units
-Heli-bombing
-other ways not shown here:
 - Avalauncher: a portable type gun that shoots explosive arrows, used at ski resorts such as Sunshine, Alberta and often used at mining operations***
 - Gazex/Gazflex: a remote controlled tube secured to the ground which triggers avalanches by gas explosion. It is used in Kootenay Pass, BC.***
 - DaisyBell: a remote controlled bell-shaped avalanche trigger system long-lined under a helicopter.***
 - Hand-bombing: Explosives thrown by hand near avalanche start zone.***

Cleaning up the Obstacle:

1. T / F Working to clear avalanche debris was a safe job in the early 1900's.
F – working in a slide path you are always at risk
2. T / F Men on digger gangs used to dig by hand.
T – in the early days of the Railway, digger gangs of men were used to dig out the rail line from avalanche debris
3. T / F Avalanches are powerful enough to move a train locomotive
T – avalanches are extremely powerful, removing debris and trees but also anything else in its path such as train cars and locomotives.
4. T / F The Rotary Snow Plough was a Canadian invention
T – It was invented by an Ontario dentist, J.W. Elliot, in 1869
5. Why was the Rotary Snow Plough not used post 1960's?
Rocks and trees often got caught up in the blades potentially breaking the Rotary Plough System
6. How has clearing out avalanche debris become safer over the years?
Working in a machine could provide protection, wearing avalanche safety gear

7. Describe how technology has made clearing of avalanche debris more efficient.
Machinery is faster than human hands. Less personnel required.