

Landslide activity 5a: **Landslides in Canada quiz**

Description: This is an independent study in which students read about landslides in the accompanying document and then complete a quiz of true or false, or multiple choice questions.

Teacher instructions:

- Refer your students to the information about landslides in the document **Atlas of Canada: Landslides** [PDF] - included as part of these resources.
or
Provide your students with copies of the Landslides in Canada “PowerPoint” [PDF] and accompanying notes [PDF] included as part of these resources.
- Have students read the information on landslides and then complete the Student Quiz.
- The correct answers are given below. Some talking points have been added for the teacher’s use.

Quiz answers and talking points for the teacher:

1. True. Although some provinces have greater problems with landslides, all provinces have experienced landslides. Although some parts of the country rarely experience landslide fatalities, the cost of landslide damage can be considerable.
2. False. Landslides can happen in all types of terrain. The type of landslide varies, and depends on the local geology, topography, and triggering conditions.
3. d) British Columbia and Quebec People are often surprised to learn that many landslide disasters have occurred in Quebec. This is the result of a particularly sensitive type of geology, the Leda clay, and a high population density. This clay has high water content and if disturbed it may ‘liquefy’, which means it may lose its strength and collapse and turn into a liquid mud.
4. False. Landslides occur in all geological material including bedrock, sand, clay and rubble. They also can occur in man-made structures such as earth dams and railway embankments.
5. False. About 600 people have been killed by landslides in Canada.
6. b) Frank, Alberta. In 1903 a landslide from Turtle Mountain buried the town of Frank, Alberta, killing more than 70 residents.
7. False. Although human activities have caused many landslides, most landslides are the result of natural causes; including excessive or intense precipitation events, erosion of the bottom of slope by a river, wave action at the bottom of cliffs, groundwater pore pressure, thawing of ice-rich permafrost, and earthquakes.
8. True. If the landslide dams the river, the river will cause a flood upstream of the dam. The area downstream of the dam is in danger of an outburst flood if the dam breaks.
9. True.
10. True. The 1929 landslide off the continental shelf of the Grand Banks caused a tsunami in the Gulf of St. Lawrence and caused 27 deaths in Newfoundland.
11. e) all of the above.
12. True. Most cities have urban plans that do not allow buildings on slopes that have been identified as potentially unstable.
13. True. Numerous artificial methods of protection can be constructed. For example, a diversion chute directs the path of a landslide away from a community or structure. A catchment basin is an artificial method of stopping the further movement of debris. Protective walls or netting can prevent rockfalls along roads. Improving drainage can prevent some landslides. There are numerous methods, and the best choice depends on the local conditions. However, where possible, the best method is to avoid the unstable slopes.

Landslides in Canada

Select the correct answer.

1. All Canadian Provinces and Territories have landslides.
True or False?
2. Landslides only occur on mountains.
True or False?
3. The provinces with the greatest number of disastrous landslides are:
 - a) Quebec and Ontario
 - b) Alberta and British Columbia
 - c) Newfoundland and Alberta
 - d) British Columbia and Quebec
4. Most landslides occur in bedrock.
True or False?
5. About 6000 people have been killed by landslides in Canada in recorded history.
True or False?
6. Where was the worst landslide disaster in Canada?
 - a) Hope, British Columbia
 - b) Frank, Alberta
 - c) St-Jean-Vianney, Quebec
 - d) Burin Peninsula, Newfoundland
7. Most landslides are caused by human action.
True or False?
8. A landslide can dam a river and cause a flood.
True or False?
9. An earthquake can cause a landslide.
True or False?

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10. In 1929 an underwater landslide caused a tsunami that hit Newfoundland.

True or False?

11. Damage to buildings during landslides can be caused by:

- a) collision from heavy debris
- b) burial under debris
- c) collapse of ground under the building
- d) flooding upstream of a landslide dam
- e) all of the above

12. People should not build houses on unstable slopes.

True or False?

13. There are a number of ways to protect a community from the danger of a future landslide.

True or False?