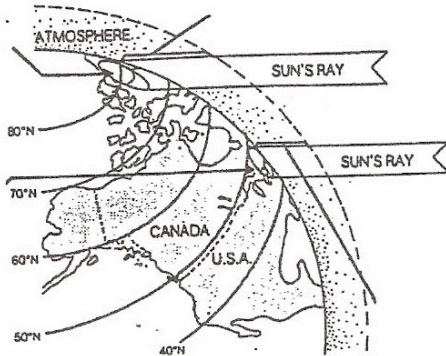




Climate Exercise #2: Factors Affecting Climate

Factor #1: Latitude

[1] What is the general relationship between latitude of a place and the temperature there?



Factor #2: Relief and Elevation

[1] What is relief? _____

[2] How does relief affect climate? Give an example where this happens in Canada.

[3] Define lapse rate

Steps for Calculating Changes in Temperature of a Rising Air Mass***Information Provided:***

Temperature at Sea Level is 26°C

Height of mountain is 1400 metres

Condensation occurs at 900 metres

What is the temperature at the top of the mountain? _____

Step One: How far will the air mass rise before condensation occurs?

Answer:

Step Two: How much will the temperature drop in this distance?

Rate of cooling is $1^{\circ}\text{C}/100$ metres

Answer:

Step Three: How far will the air mass rise after condensation occurs?

Answer:

Step Four: How much will the temperature drop in this distance?

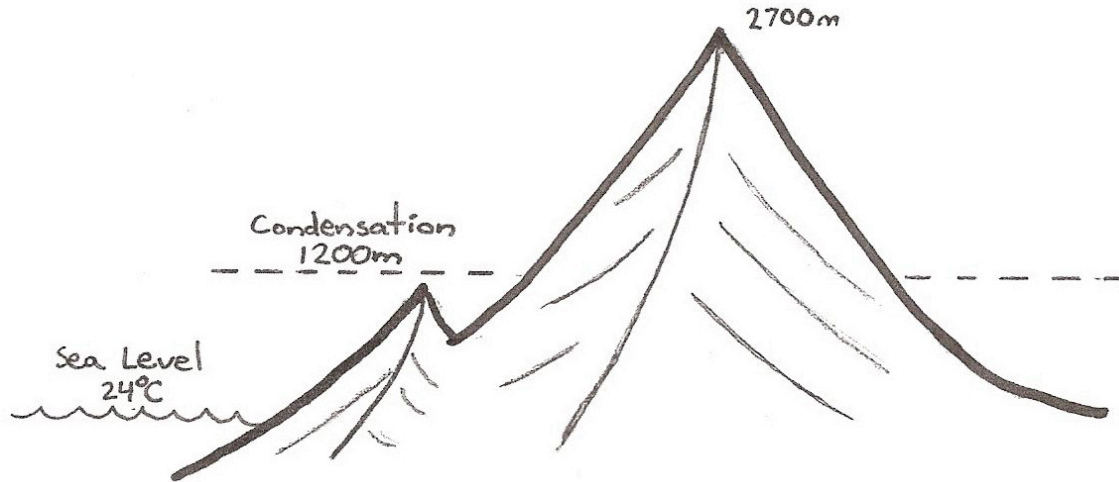
Rate of cooling when condensation occurs is $0.6^{\circ}\text{C}/100$ metres

Answer:

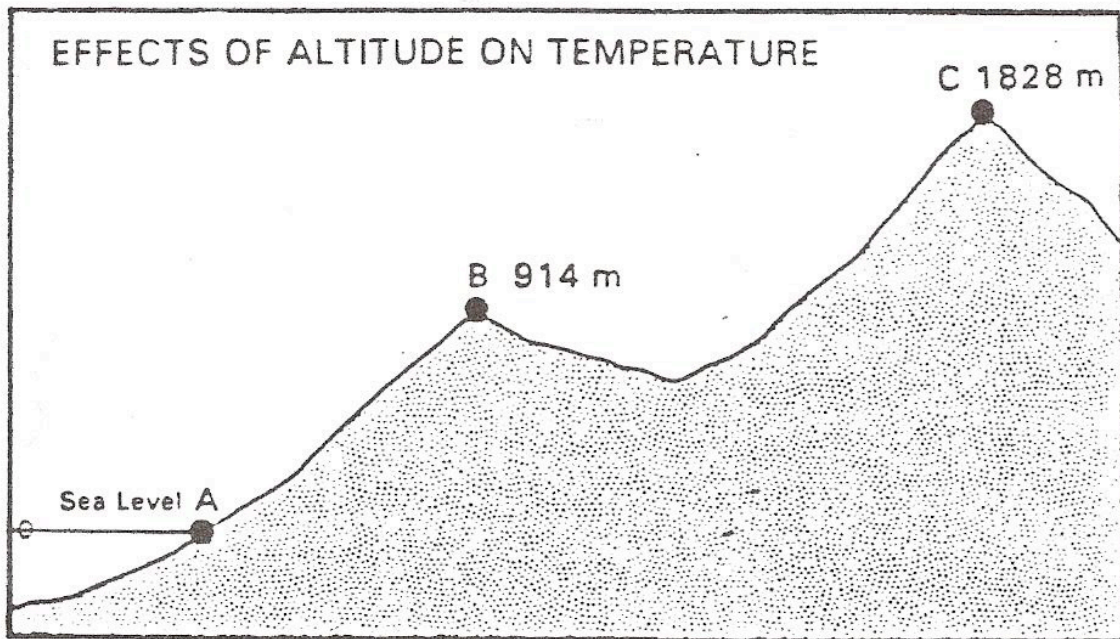
Step Five: What is the temperature on top of the mountain?

Answer:

- [5] Mount Garibaldi is a 2700 metre high mountain located near Vancouver. The Temperature at sea level is 24°C . What will the temperature of the air mass moving up the mountain be at the top of the mountain if condensation starts at 1200 metres? Show all five steps.



[6] Examine the diagram below. Answer the question below it. Show all your work.



If the temperature at Point A is 27°C , calculate the temperature at Point C.
Condensation occurs at 1300 metres.

[7] Complete the following questions:

- (a) Temperature at Sea Level is 30°C .
Height of the mountain is 2000 metres.
Condensation occurs at 900 metres.
What is the temperature on top of the mountain?
- (b) Temperature at Sea Level is 21°C .
Height of the mountain is 2500 metres.
Condensation occurs at 1100 metres.
What is the temperature on top of the mountain?
- (c) Temperature at Sea Level is 4°C .
Height of the mountain is 1550 metres.
Condensation occurs at 1400 metres.
What is the temperature on top of the mountain?
- (d) Temperature at Sea Level is 25°C .
Height of the mountain is 1950 metres.
Condensation occurs at 940 metres.
What is the temperature on top of the mountain?
- (e) Temperature at Sea Level is 8°C .
Height of the mountain is 2350 metres.
Condensation occurs at 980 metres.
What is the temperature on top of the mountain?
- (f) Temperature at Sea Level is -2°C .
Height of the mountain is 2200 metres.
Condensation occurs at 900 metres.
What is the temperature on top of the mountain?
- (g) Temperature at Sea Level is -5°C .
Height of the mountain is 1870 metres.
Condensation occurs at 1050 metres.
What is the temperature on top of the mountain?

