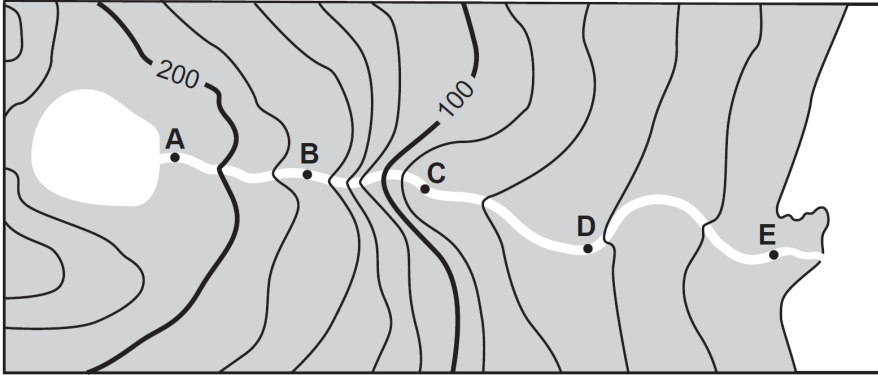


1. The Hudson River begins its flow at Lake Tear of the Clouds, near Mt. Marcy, New York, where it has a surface elevation of 4293 feet. It travels 162 miles to Troy, New York, where the river's surface elevation is two feet. The gradient of the Hudson River between Lake Tear of the Clouds and Troy is approximately

- A) 4291.00 ft/mi B) 81.00 ft/mi C) 26.49 ft/mi D) 0.04 ft/mi

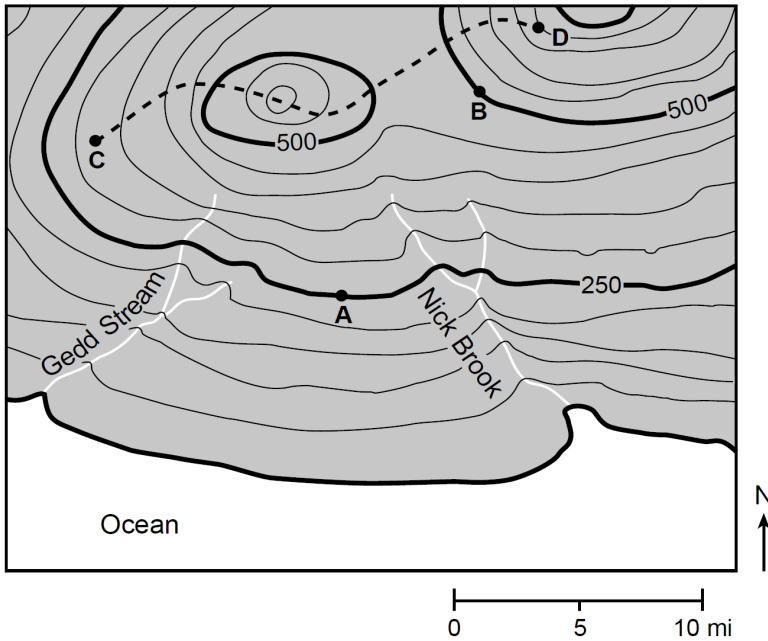
2. The topographic map below shows the path of a river. Points *A* through *E* are locations in the river.



Between which two points is the river flowing the fastest?

- A) *A* and *B* B) *B* and *C* C) *C* and *D* D) *D* and *E*

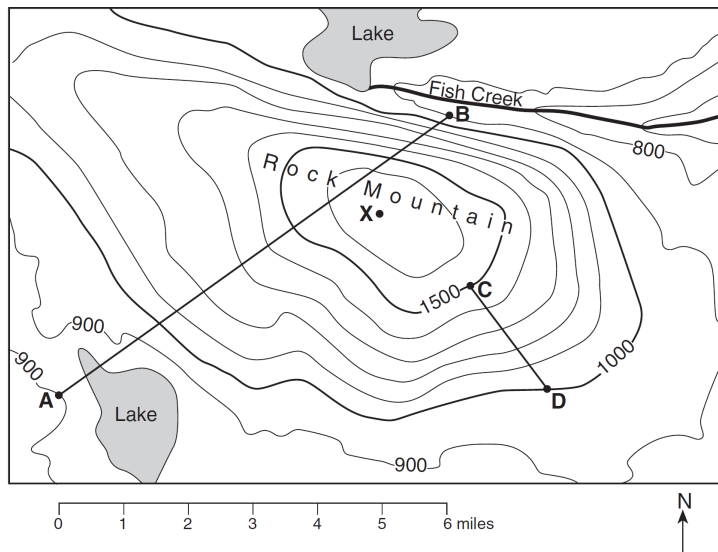
3. Base your answer to the following question on the topographic map below and on your knowledge of Earth science. On the map, points *A*, *B*, *C*, and *D* represent surface locations. The dashed line between points *C* and *D* represents a hiking trail. Elevations are in feet (ft).



The gradient between location *A* and location *B* is approximately

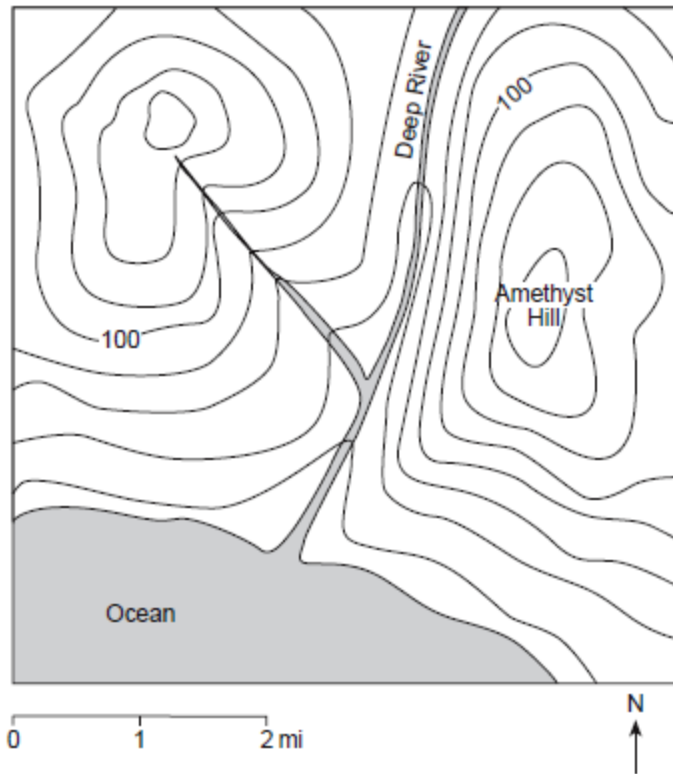
- A) 0.04 ft/mi B) 25 ft/mi C) 40 ft/mi D) 50 ft/mi

Base your answers to questions 4 and 5 on the topographic map below. Points *A*, *B*, *C*, *D*, and *X* represent locations on the map. Elevations are measured in feet.



4. What is the highest possible elevation of point *X* on Rock Mountain?
A) 1,599 ft B) 1,600 ft C) 1,601 ft D) 1,699 ft
5. What is the average gradient of the slope along straight line *CD*?
A) 100 ft/mi B) 250 ft/mi C) 500 ft/mi D) 1,000 ft/mi

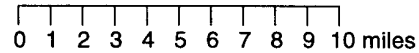
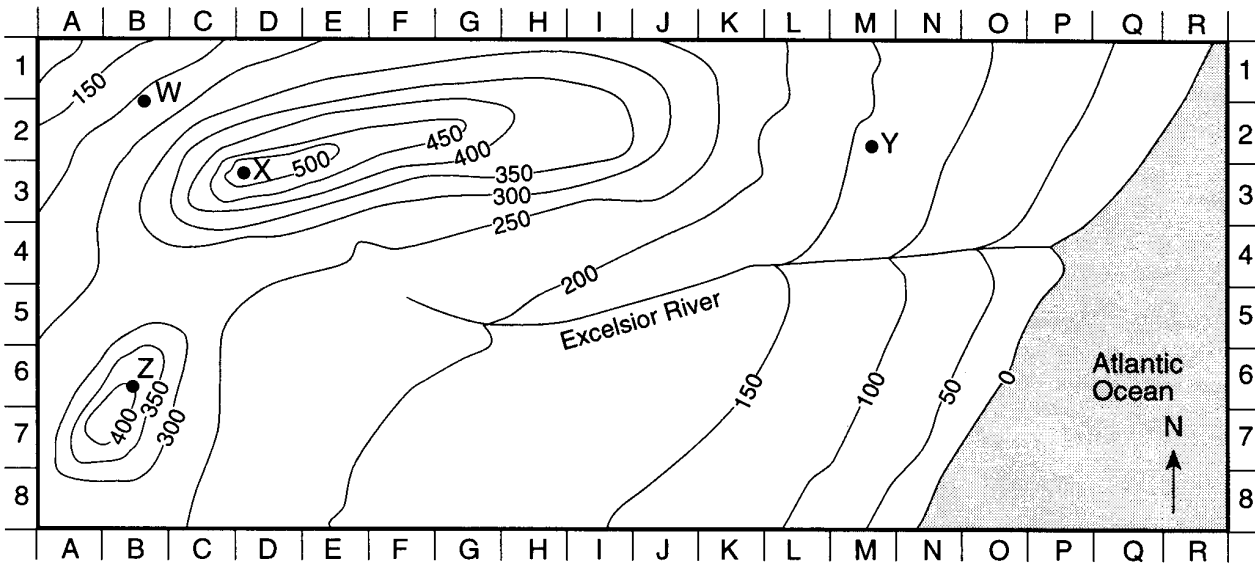
6. A contour map is shown below. Elevations are shown in feet.



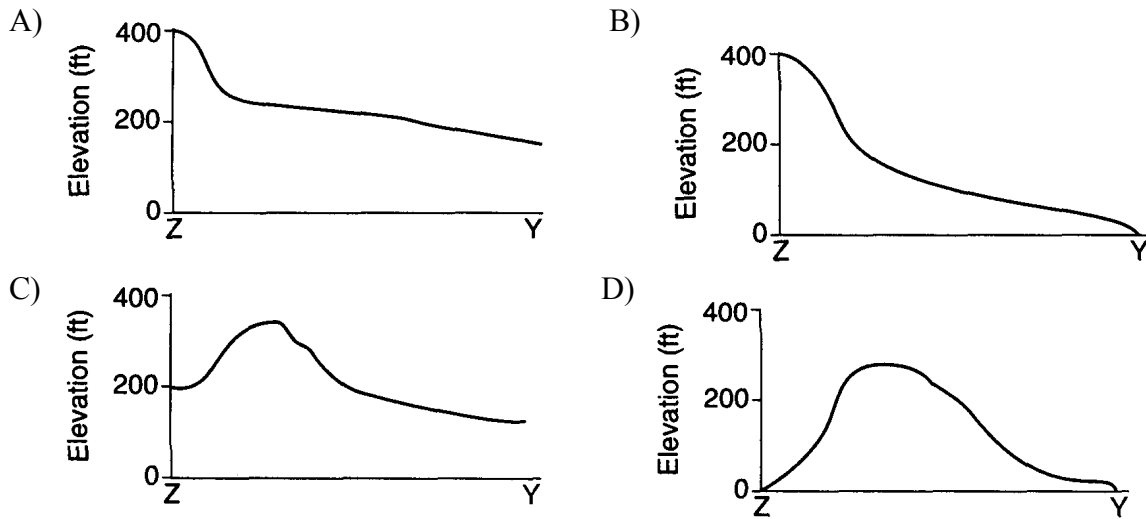
Which side of Amethyst Hill has the steepest slope?

- A) north B) south C) east D) west

Base your answers to questions 7 through 10 on the topographic map below that represents a location in North America. A grid system of letters and numbers along the edges of the map is provided to assist in finding locations. Elevations are expressed in feet.



7. Which profile best represents the topography along a straight line from point Z (6-B) to point Y (2-M)?



8. If a person at point W (grid location 2-B) travels uphill, in which direction is the person traveling?

- A) northwest B) northeast C) southwest D) southeast

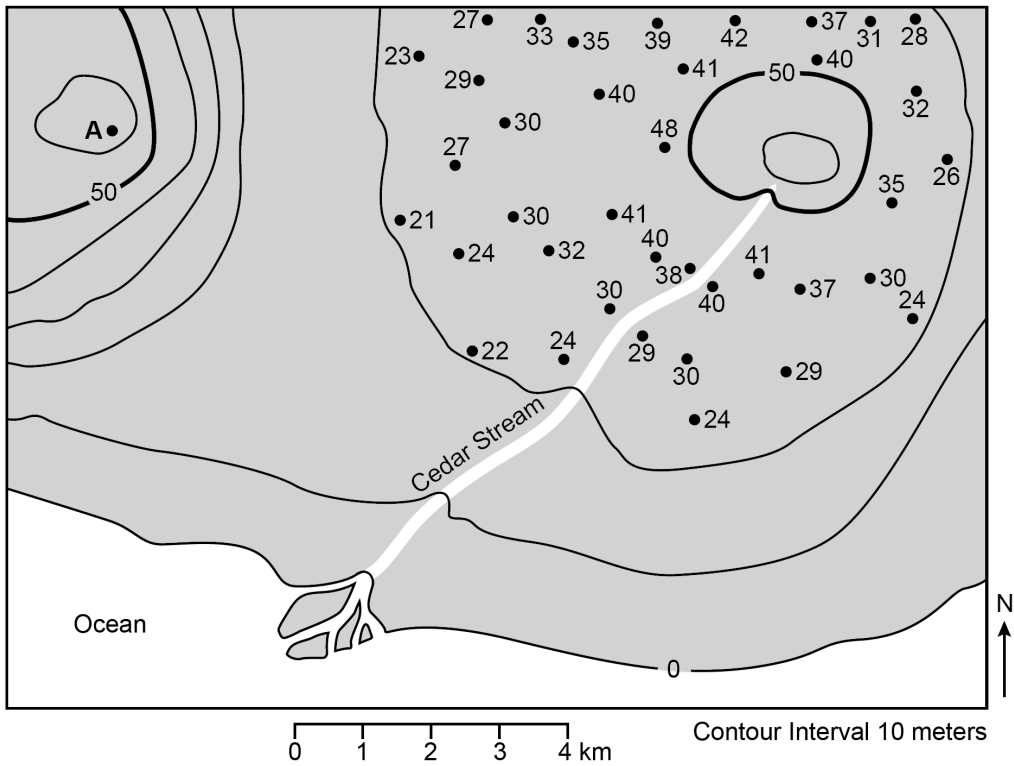
9. What is a possible elevation at point X (grid location 3-D)?

- A) 488 ft B) 548 ft C) 558 ft D) 598 ft

10. What is the approximate elevation at grid location 7-I?

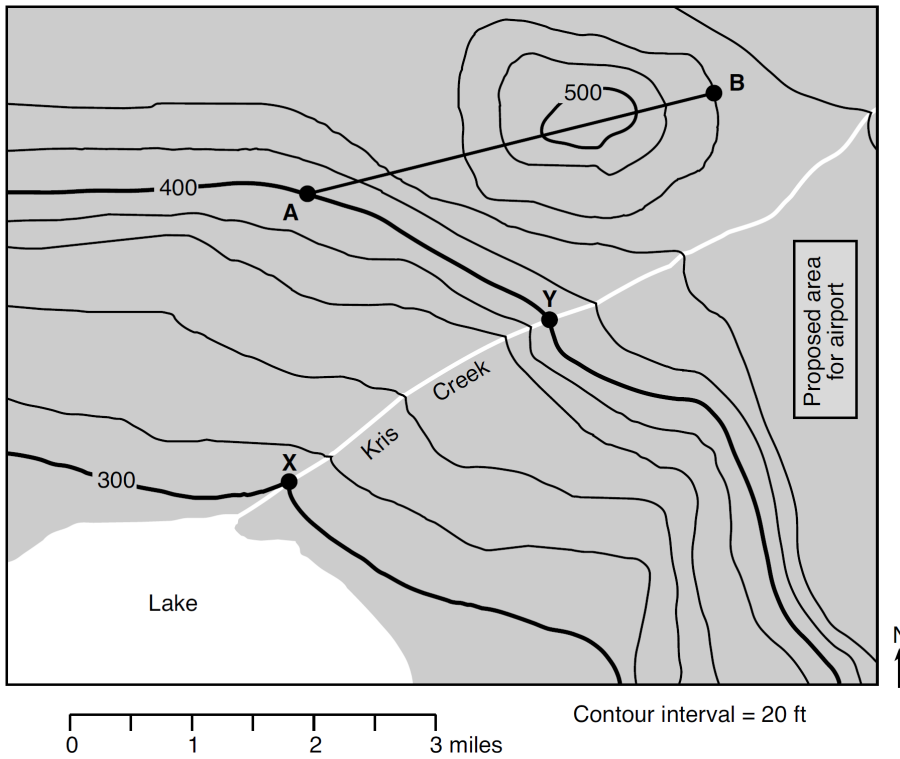
- A) 140 ft B) 170 ft C) 200 ft D) 230 ft

11. Base your answer to the following question on the topographic map on your answer sheet and on your knowledge of Earth science. The map shows elevations, recorded in meters (m). Some contour lines are shown. Point *A* is a location on the land surface.



On the map above draw the 30-meter and 40-meter contour lines. Extend both contour lines to the edge of the map.

12. Base your answer to the following question on on the topographic map below and on your knowledge of Earth science. The map shows features and contour lines in the region of a proposed airport. Line AB is a reference line on the map. Points X and Y represent surface locations along a creek. Elevations are shown in feet.



On the grid in your answer booklet, construct a topographic profile along line AB by plotting the elevation of each contour line that crosses line AB . Points A and B have been plotted. Connect all nine plots with a line from A to B to complete the profile.

