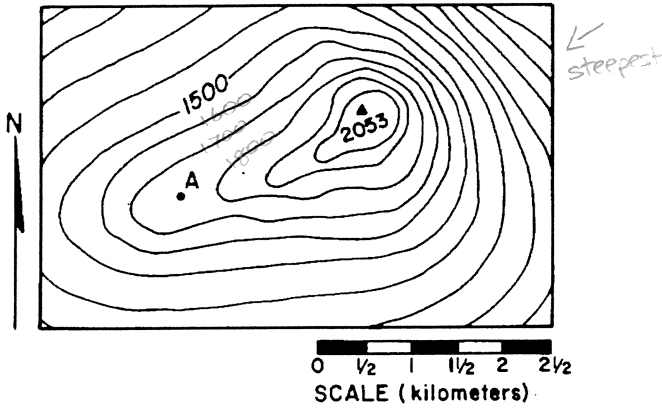
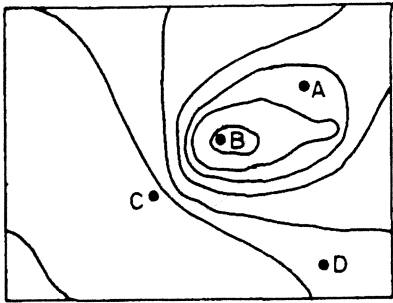


Base your answers to questions 1 and 2 on the topographic map shown below.



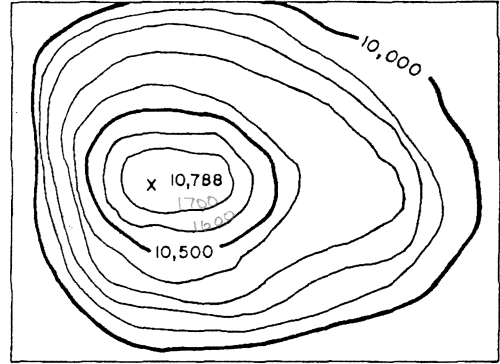
- What is the most likely elevation of point A?
 - (1) 1,250
 - (2) 1,650
 - (3) 1,750
 - (4) 1,850
- Which section of the map shows the steepest gradient?
 - (1) southeast
 - (2) northeast
 - (3) southwest
 - (4) northwest
- The diagram below is a contour map. Between which two points is the slope of the hill steepest?



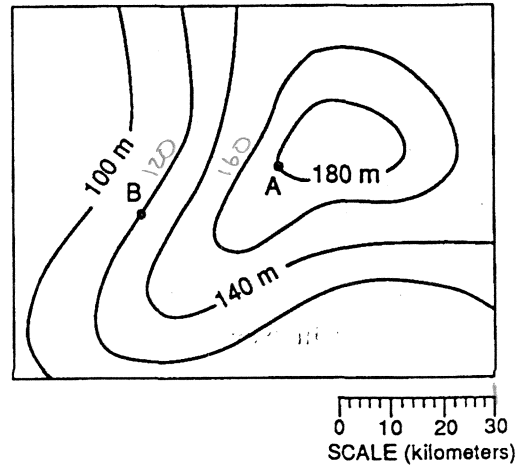
- Between which two points is the slope of the hill steepest?
 - (1) A and B
 - (2) B and C
 - (3) C and D
 - (4) A and D
- A stream has a source at an elevation of 1,000. meters. It ends in a lake that has an elevation of 300. meters. If the lake is 200. kilometers away from the source, what is the average gradient of the stream?
 - (1) 1.5 m/km
 - (2) 3.5 m/km
 - (3) 10. m/km
 - (4) 15 m/km

$$\frac{1000m - 300m}{200km} = \frac{700m}{200km} = 3.5m/km$$

5. What is the elevation of the highest contour line shown on the map below?



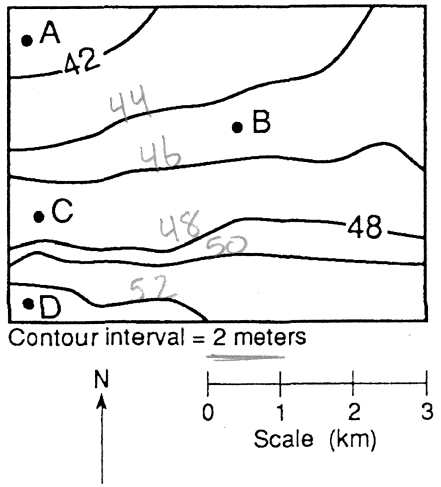
- What is the elevation of the highest contour line shown on the map below?
 - (1) 10,000 feet
 - (2) 10,688 feet
 - (3) 10,700 feet
 - (4) 10,788 feet
- The map below represents an elevation field.



- What is the approximate gradient between point A and point B?
- (1) 0.5 m/km
 - (2) 2.0 m/km
 - (3) 3.0 m/km
 - (4) 4.0 m/km

$$\frac{180m - 120m}{30km} = \frac{60m}{30km} = 2m/km$$

Base your answers to questions 7 and 8 on the topographic map below. A, B, C, and D are locations on the map.



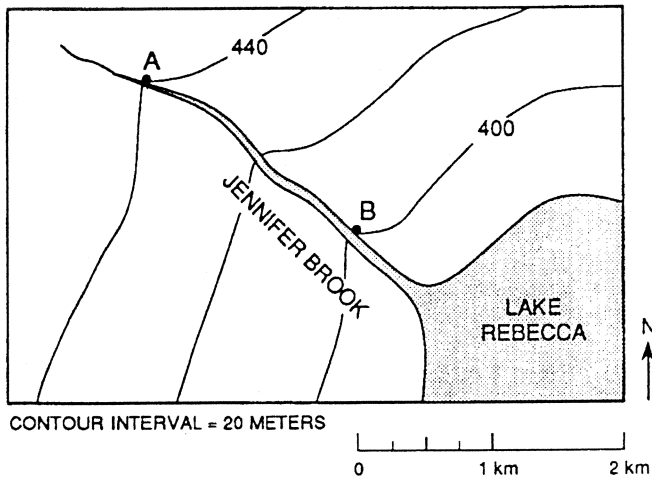
7. Which location most likely has an elevation of 45 meters?

- (1) A (3) C
 (2) B (4) D

8. Between which two locations does the steepest gradient occur?

- (1) A and B (3) C and D
 (2) B and C (4) A and C

9. Base your answer to the following question on the map below.

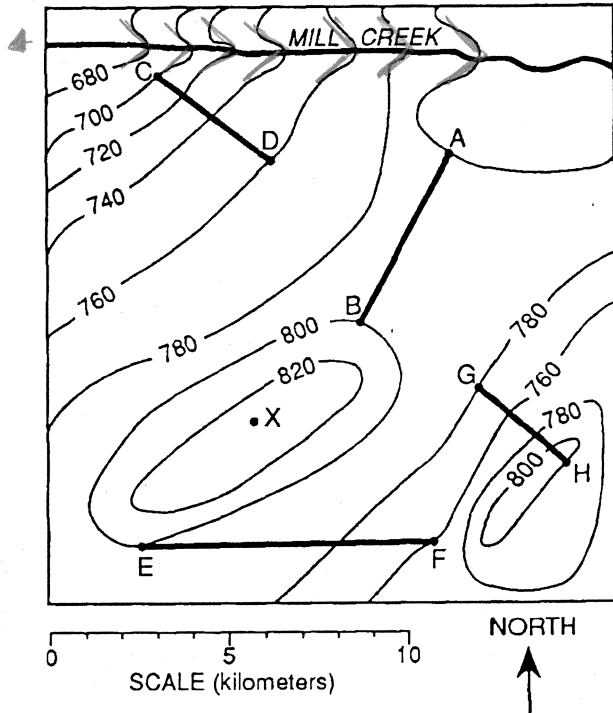


What is the approximate gradient, in meters per kilometer, of Jennifer Brook between points A and B?

- (1) 20 m/km (3) 80 m/km
 (2) 40 m/km (4) 220 m/km

$$\frac{440 - 400 \text{ m}}{2 \text{ km}} = \frac{40 \text{ m}}{2 \text{ km}} = 20 \text{ m/km}$$

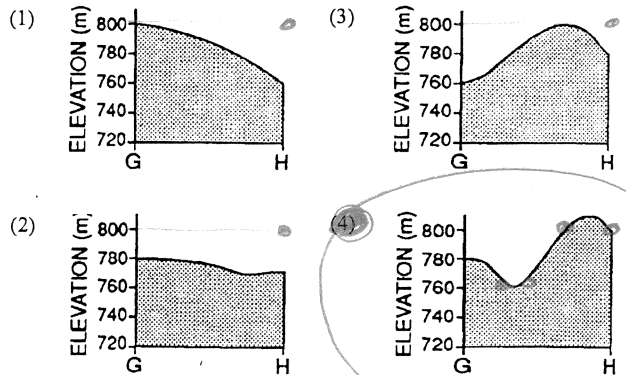
Base your answers to questions 10 through 12 on the Earth Science Reference Tables and the topographic map below. The topographic map represents elevation contours measured in meters. Four straight lines, AB, CD, EF, and GH, have been drawn for reference purposes.



10. What could be the elevation of point X?

- (1) 819 m (3) 841 m
 (2) 826 m (4) 850 m

11. Which profile below most likely represents cross section GH?



12. What is the general direction of flow of Mill Creek?

- (1) east to west (3) north to south
 (2) west to east (4) south to north