

## Lab Nine - Topographic Maps

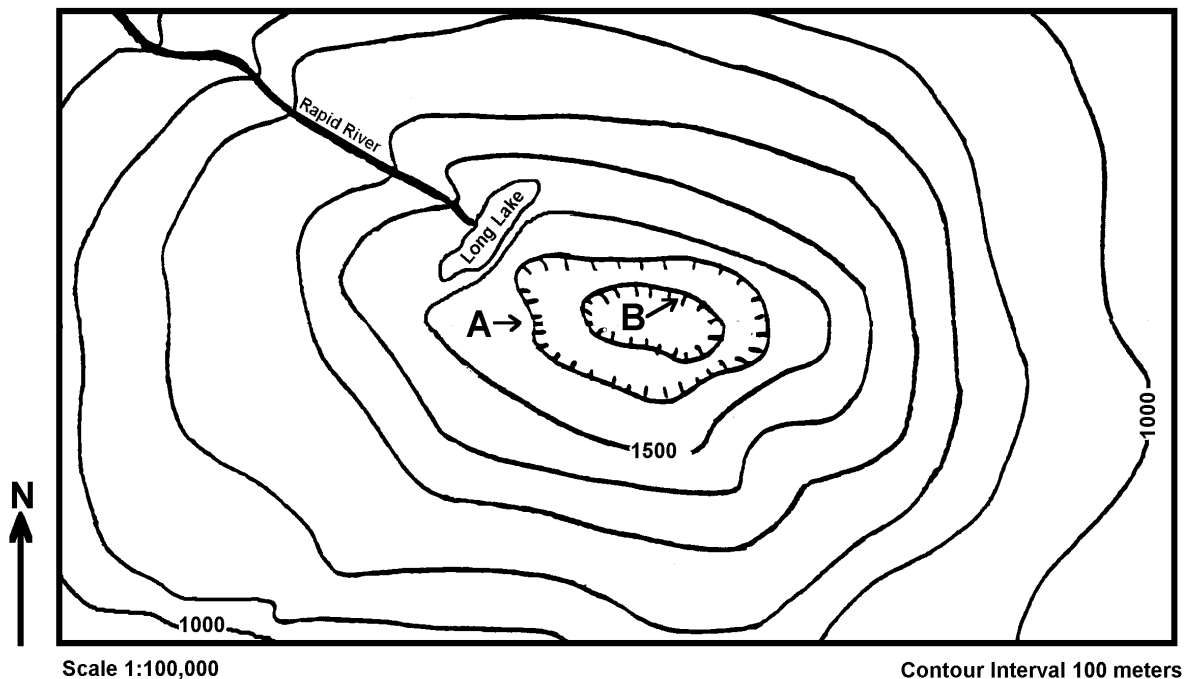
**Directions: Record all answers on the separate answer sheet provided. Where appropriate show all work and label all answers with proper units.**

Base your answers to questions 1 and 2 on Figure 1, which is shown on your answer sheet. It shows a portion of map on which elevations have been plotted. Letters A, B, C, D, and E identify specific points on the map.

1. On the map draw contour lines using a 20 meter contour interval.
2. Between which two letters would the Jencott River be flowing the slowest?

Base your answers to questions 3 through 5 on the topographic map shown below as Figure 2. Letters A and B identify two contour lines on the map.

**Figure 2**

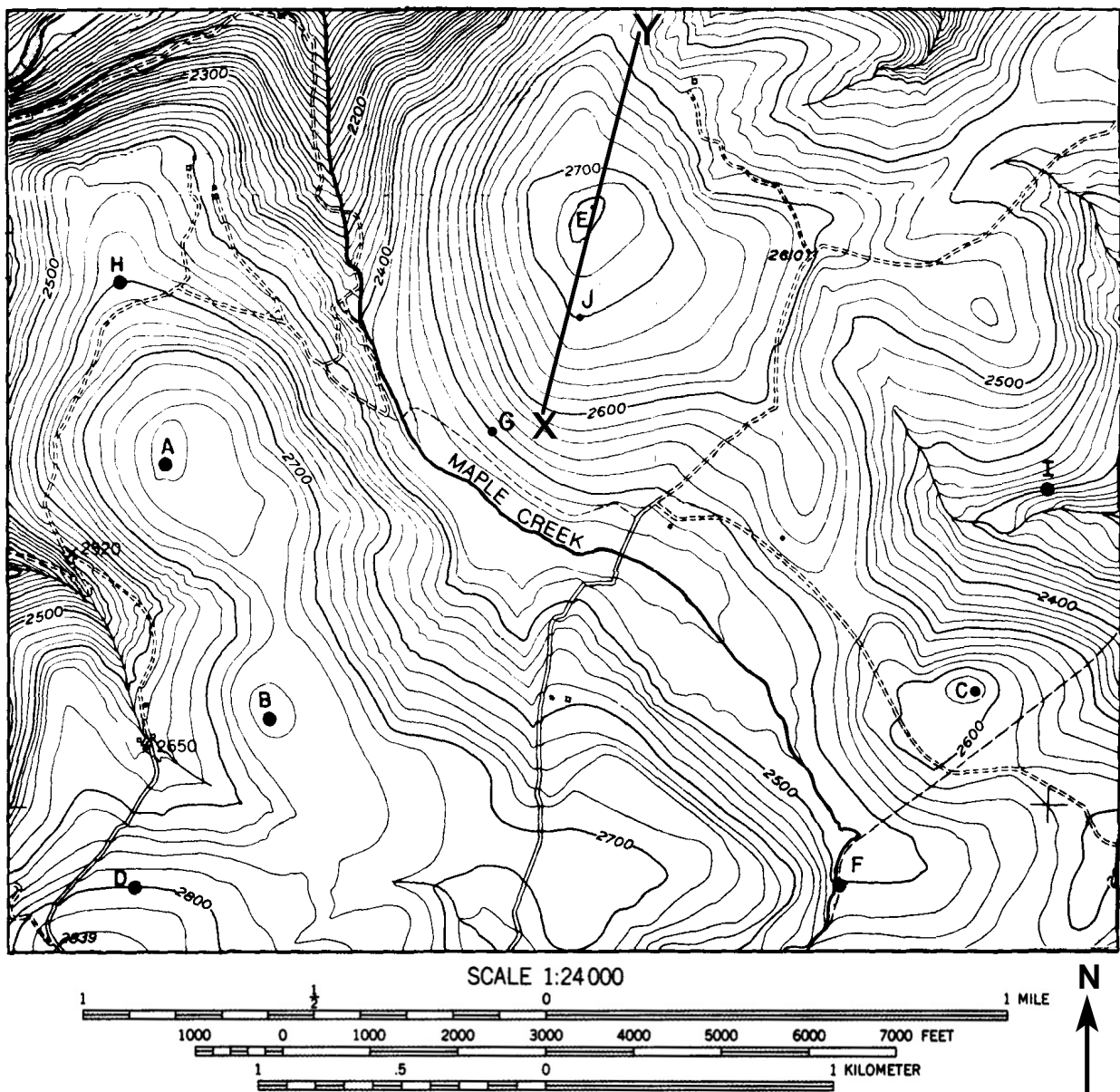


3. What is the *feature* represented by contour lines A and B?
4. What is the elevation of contour line A?
5. What is the elevation of contour line B?
6. If this map had color what would be the color of Long Lake?

Base your answers to questions 7 through 16 on Figure 3 which shows a topographic map. Letters A through J identify locations on the map and line X-Y is provided for reference. The contour interval is 20 feet.

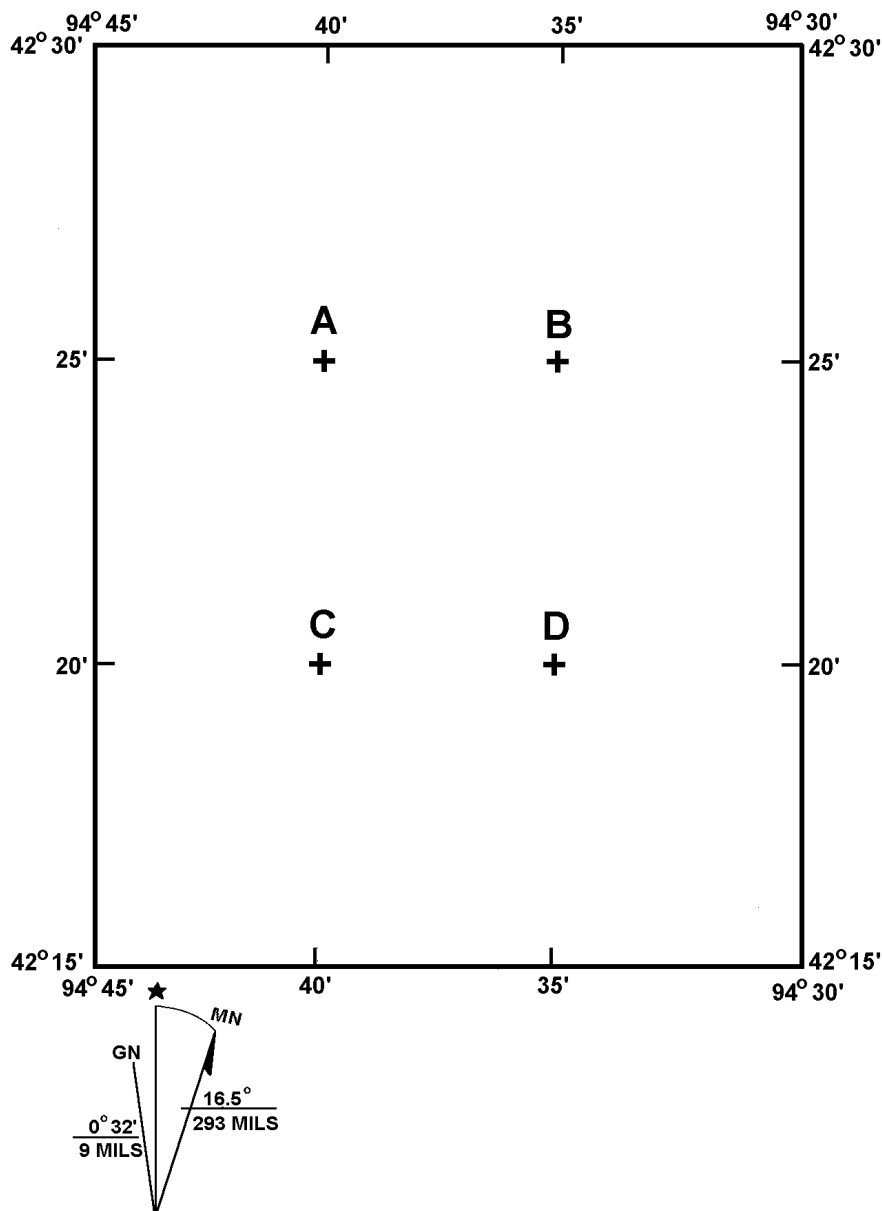
7. Construct a topographic profile for line X-Y. Label the vertical scale using the contour interval starting with 2580 feet.
8. What is the fractional *vertical* scale of the profile?
9. What is the fractional *horizontal* scale of the profile?
10. Calculate the vertical exaggeration. Round your answer to the *nearest tenth*. Show all calculations in the box provided on your answer sheet.
11. What is the elevation of contour line H?
12. Which of the following locations has the highest elevation (A,B,C, or D)?
13. What is the **maximum** possible elevation of hill E?
14. Towards what approximate compass direction is Maple Creek flowing?
15. What type of topographic feature is found between hills A and B?
16. Calculate the gradient between point G (elevation 2,500 feet) and point J. Show all work in the box provided on your answer sheet.

Figure 3



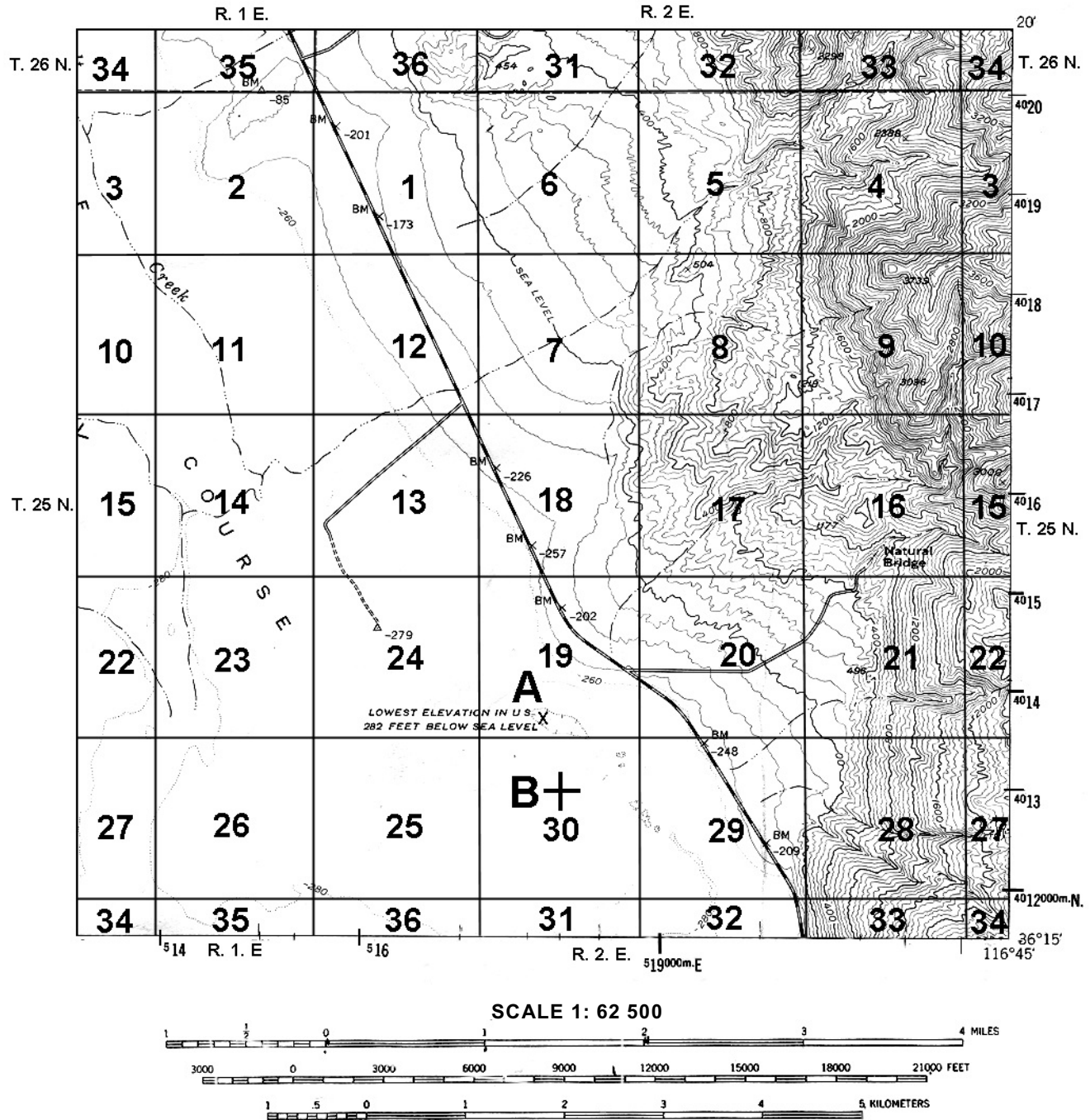
Base your answers to questions 17 through 21 on Figure 4 which is shown below. It shows some of the information that is shown on the margins of standard U.S. Geological Survey topographic maps. Note that contour lines have been omitted.

17. What is the magnetic declination shown on this map?
18. This map covers how many minutes of latitude?
19. This map covers how many minutes of longitude?
20. Which letter is nearest the  $\star$  symbol that is at  $42^\circ 25' \text{ N } 94^\circ 35' \text{ W}$ ?
21. While the longitude covered from east to west is the same at the northern and southern borders of the map on an actual map the linear distance east to west at the northern border is less than the linear distance along the southern border. What is the reason for this discrepancy?



Base your answers to questions 22 through 25 on Figure 5 below that represents the southeast corner of a 15 minute series topographic map. Letters A and B identify locations on the map.

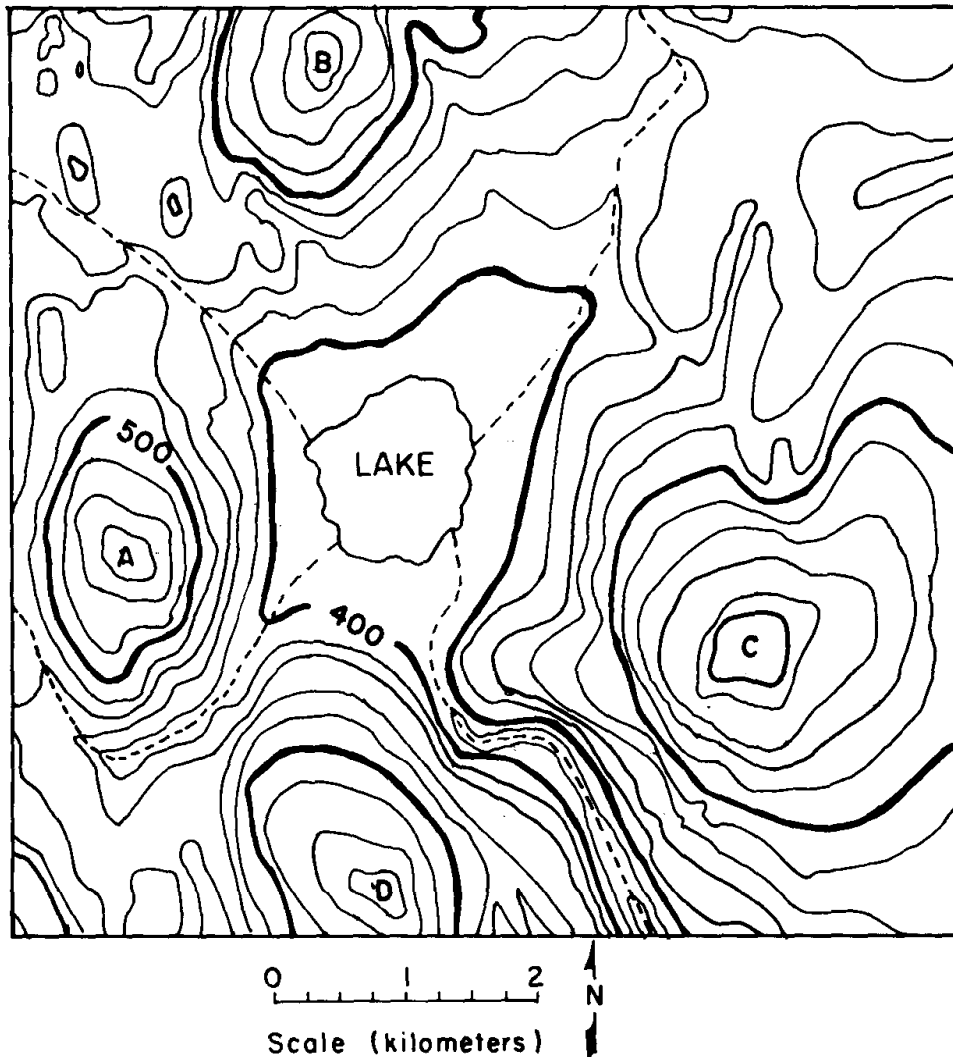
**Figure 5**



22. Use PLSS (Public Land Survey System) information on the map to identify the location of the benchmark that is found near letter **A** that identifies the lowest elevation in the United States (-282 ft). Locate the benchmark (shown by an  $\times$ ) to the nearest  $\frac{1}{4}$  of a  $\frac{1}{4}$ .
23. Determine the Universal Transverse Mercator (UTM) coordinates for the exact center of the  $+$  symbol that is located near letter **B** on the map.
24. On the colored version of this map, the contour lines would be what color?
25. The highest elevation shown on this map is 3732 feet above sea level. What is the total relief of this map?

Base your answers to the following questions on Figure 6 below, which shows a contour map. The dashed lines represent streams flowing in the region. Four hills are identified by letters A, B, C, and D. Elevations are in meters.

Figure 6



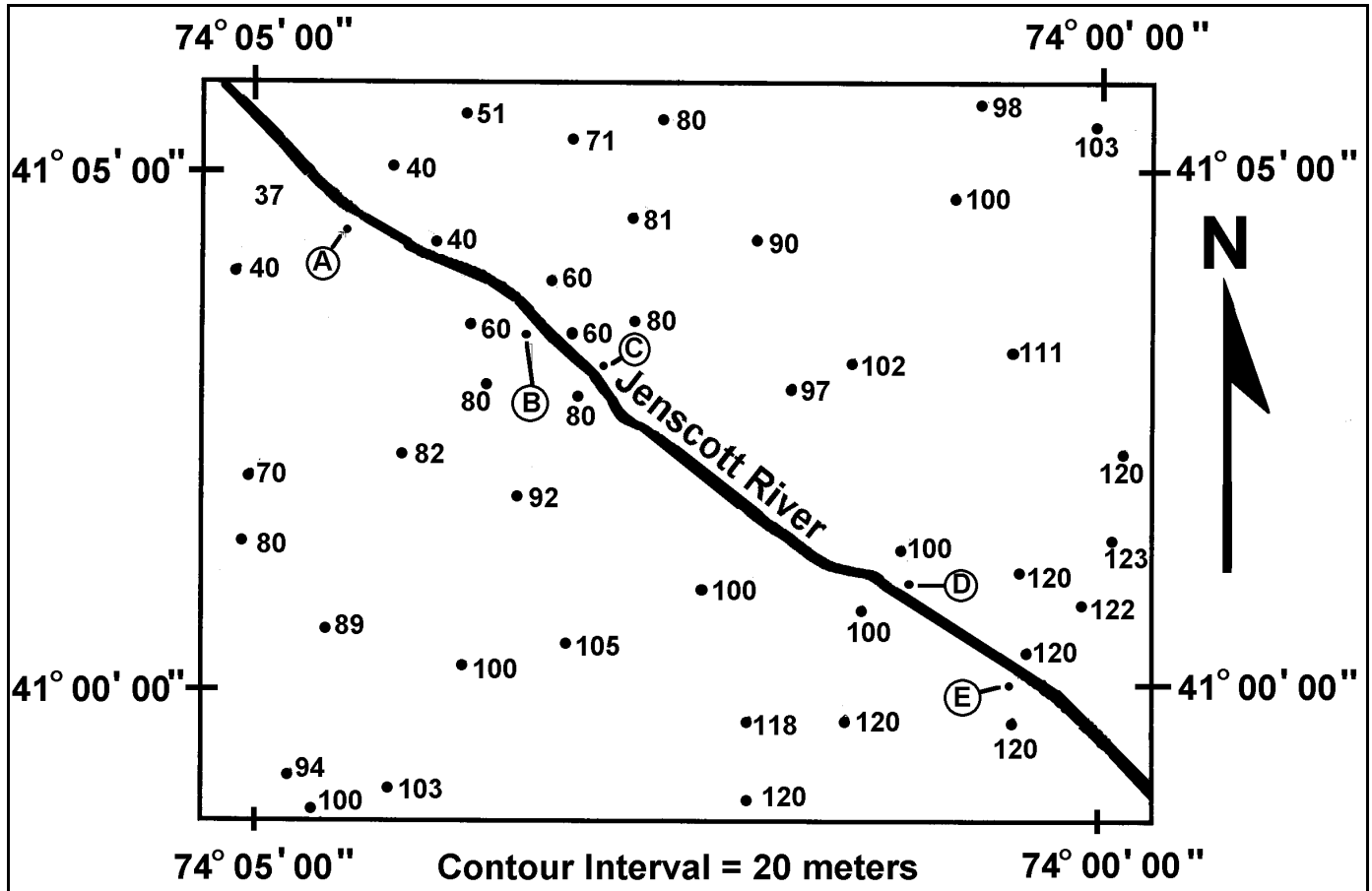
- 26 What is the contour interval used on this map?
- 27 A stream which flows *away* from the lake is located between hills
- A. A and B
  - B. B and C
  - C. C and D
  - D. D and A

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**Answer Page: Topographic Maps Lab Exam**

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1. On the map draw contour lines using a 20 meter contour interval.

**Figure 1**

2. \_\_\_\_\_  
3. \_\_\_\_\_  
4. \_\_\_\_\_ meters  
5. \_\_\_\_\_ meters  
6. \_\_\_\_\_  
7. Profile Construction  
8. \_\_\_\_\_  
9. \_\_\_\_\_


**PROFILE**

10. \_\_\_\_\_

11. \_\_\_\_\_ feet

12. \_\_\_\_\_

13. \_\_\_\_\_ feet

14. \_\_\_\_\_

15. \_\_\_\_\_

16. \_\_\_\_\_

17. \_\_\_\_\_

18. \_\_\_\_\_ minutes

19. \_\_\_\_\_ minutes

20. \_\_\_\_\_

21. \_\_\_\_\_

22. \_\_\_\_\_

23. \_\_\_\_\_

24. \_\_\_\_\_

25. \_\_\_\_\_ feet

26. \_\_\_\_\_ meters

27. \_\_\_\_\_

**Vertical Exaggeration Calculations**

**Gradient Calculations**

**Work for question 25**