

PASSAGE IV

Large lakes have their own climate that differs from the climate in adjacent forest and sand dune areas. A scientist performed the following studies to learn more about lake climates.

Study 1

A remote site in a rural area was selected where a large body of water was located next to a vast stretch of sand dunes. After both the lake and the sand dunes had been exposed to full sunlight for 8 hours, air temperature readings, in degrees Celsius ($^{\circ}\text{C}$), were taken at the surface every 30 meters (m) across the water and sand, starting above the deepest part of the lake, and moving toward a point on the shoreline. The results are shown in Figure 1.

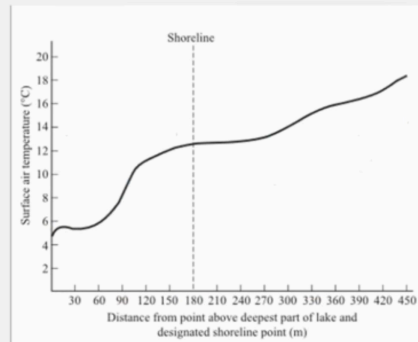


Figure 1

Study 2

Air temperatures were recorded hourly over a 24-hour period at 3 sites: above the deepest part of a large body of water (the lake site), an adjacent sand dune site, and a nearby forest site. Temperatures were recorded on 30 consecutive days during the summer and 30 consecutive days during the winter. Each hourly temperature was averaged for the season. The results are shown in Figure 2.

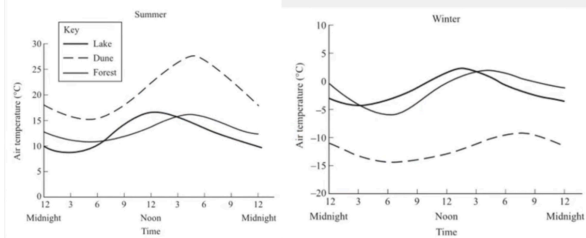


Figure 2

20. According to Study 1, between what two distances, from the point above the deepest part of the lake to the point on the shoreline, was there the sharpest increase in temperature?

- F. Between 30 meters and 60 meters
- G. Between 60 meters and 90 meters
- H. Between 90 meters and 120 meters
- J. Between 120 meters and 150 meters

21. Based on the results of Study 2, which of the following generalizations could be made about the difference in temperatures between summer and winter for the three sites?

- A. Dune areas are the warmest areas in the summer and the coldest areas in the winter.
- B. Lake areas are the coldest areas in the winter and the warmest areas in the summer.
- C. Forest areas are the warmest areas in the winter and the warmest areas in the summer.
- D. Dune areas are the coldest areas in the winter and the coldest areas in the summer.

22. If Study 2 produced results typical of any dune site, which of the following generalizations could be made about seasonal climates?

- F. The temperature variation at a dune site throughout a typical day is greater during the winter than it is during the summer.
- G. The temperature variation at a dune site throughout a typical day is less during the winter than it is during the summer.
- H. The maximum temperature at a dune site throughout a typical winter day is the same as that at a lake site.
- J. The maximum temperature at a dune site throughout a typical winter day is the same as that at a forest site.

23. According to Study 2, the temperature difference between the forest and dune sites at 9 p.m. on a typical summer day is approximately:

- A. 0°C.
- B. 5°C.
- C. 8°C.
- D. 15°C.

24. According to Figure 2, the conditions at the lake site are most similar to the conditions at the forest site at which of the following times?

- F. Midnight
- G. 9 a.m.
- H. 3 p.m.
- J. 9 p.m.

PASSAGE V

Horses are susceptible to hoof infections that can seriously impair the horses' ability to walk. Horse breeders routinely administer dietary supplements in addition to the horses' regular feed in order to prevent these infections. A side effect of one of these supplements – supplement X – is increased urination, which can sometimes lead to dehydration in the animal.

Twenty (20) adult horses, each weighing approximately 1,000 pounds, were randomly selected and assigned to two groups of 10 horses each. Group R received dietary supplement X while Group S received a placebo (a substance containing no supplement). Each horse in both groups received the same amount of feed and water each day. The horses were placed in individual stalls for 7 days, during which time their urine output was measured. The results are shown in Table 1.

	Group R	Group S
Average urine output per horse (gallons):		
Day 1	1.8	2.1
Day 2	1.9	2.0
Day 3	2.0	1.8
Day 4	2.2	1.9
Day 5	2.5	1.8
Day 6	2.6	2.0
Day 7	2.8	1.9

25. Which of the following generalizations best fits the results of the study?

- A. The effects of dietary supplement X on urinary output cannot be immediately detected.
- B. Dietary supplements should be administered over time in order to be effective.
- C. Dietary supplement X has no effect on urinary output in horses.
- D. The horses in Group R urinated less frequently than did the horses in Group S.

26. In order to best determine the effects of dietary supplement X in this experiment, one should examine:

- F. the type of feed that each horse was given.
- G. the amount of feed that each horse was given.
- H. the urinary output over time of each horse.
- J. the average urinary output of a third group.

27. Based on the information in Table 1, on which day did the control group have the highest urinary output?

- A. Day 7
- B. Day 4
- C. Day 3
- D. Day 1

28. During the study, several of the horses in Group R began showing signs of dehydration. According to the passage, what is the most likely cause of this?

- F. The low urinary output of the horses in Group R.
- G. The amount of water that the horses in Group R were given.
- H. The high urinary output of the horses in Group R.
- J. The lack of supplements in the diet of the horses in Group R.

29. Which of the following statements is supported by the data presented in Table 1?

- A. Urinary output increased over time for Group S only.
- B. Urinary output increased over time for Group R only.
- C. Urinary output increased over time for neither Group R or Group S.
- D. Urinary output increased over time for both Group R and Group S.

30. Do the results of the study show that dietary supplement X could cause dehydration in horses?

- F. Yes, because the urinary output increased over time in the group that received the supplement.
- G. Yes, because the control group maintained a relatively constant urinary output.
- H. No, because the urinary output stayed the same over time in the group that received the supplement.
- J. No, because the urinary output of the control group was not adequately measured.

