

AP Environmental Chapters 13 & 19: DO Problem in Lakes

A biologist measured dissolved oxygen in the top 30 centimeters of a moderately eutrophic (mesotrophic) lake in the temperate zone. The day was bright and sunny, and the wind was calm. The results of the observations are presented below.

Hour	(O ₂)
6:00am	0.9 mg/L
8:00am	1.7mg/L
10:00 a.m,	3.1 mg/L
12:00 noon	4.9 mg/L
2:00 p.m.	6.8 mg/L
4:00p.m.	8.1 mg/L
6:00 p.m.	7.9 mg/L
8:00 p.m.	6.2 mg/L
10:00 p.m,	4.0 mg/L
12:00 midnight	2.4mg/L

a) Using the graph space below. plot the results that were obtained Then, using the same set of axes, draw and label an additional line/curve representing the results that you would predict had the day been heavily overcast.

b) Explain the biological processes that are operating in the lake to produce the observed data. Explain also how these processes would account for your prediction of results for a heavily overcast day

c) Describe how the introduction of high levels of nutrients such as nitrates and phosphates into the lake would affect subsequent observations. Explain your prediction.

