Application Problem 3: Interpolation

In Spring 2017, the concentration of total phosphorus (p in $\frac{mg}{L}$) and chlorophyll (c in $\frac{mg}{L}$) for each Great Lake was measured and found to be

Lake	Phosphorus ($\frac{mg}{L}$)	Chlorophyll ($\frac{mg}{L}$)
Lake Superior	4.5	0.8
Lake Michigan	8.0	2.0
Lake Huron	5.5	1.2
Western Lake Erie	39.0	11.0
Central Lake Erie	19.5	4.4
Eastern Lake Erie	17.5	3.8
Lake Ontario	21.0	5.5

The concentration of chlorophyll c indicates how much plant life is suspended in the water. As such, it indicates how unclear and unsightly the water appears.

In Summer 1999, waste treatment was performed to lower the phosphorous concentration of western Lake Erie; the goal was set to reach $15\frac{mg}{L}$. Estimate the level of chlorophyll corresponding to this concentration.

Rubric: Each of the following categories will be classified as Achieved or Opportunity. All categories must earn an Achieved ranking in order for the Application Problem to earn an Achieved Ranking.

Transforming the scenario into a mathematical problem.

- Recognizes information that is relevant to the scenario.

- Correctly relates relevant information.

Correctly implementing a relevant numerical technique.

- Chooses and appropriate numerical technique for solving the problem.

- Correctly implements the chosen numerical technique for solving the problem.

- Gives appropriate explanation as to why technique was chosen.

Clearly communicating your process and results.

- Provides necessary information to motivate and put the question in context.

- States the question and explains why it is important and interesting.

- Explains data.

- Explanation of mathematical interpretation of problem.

- States what methods are used to arrive at the solution AND why they were chosen.

- States solution of the problem.

- Interprets meaning of the solution and puts it in context of the background information.

- Clear and concise.

- All variables are clearly defined.

- Units for all quantities are given.