Graphing Enzyme Activity

The following table shows the relative activity of two digestive enzymes, pepsin and salivary amylase, in solutions of various pH.

Table 1 Activity of two enzymes at various pH

	Enzyme Activity (units/s)	
pH	Pepsin	Salivary amylase
0	0	0
1	37	0
2	100	0
3	67	0
4	33	0
5	19	19
6	5	58
7	0	100
8	0	40
9	0	13
10	0	0

1. [SP 4] Plot the data for both enzymes on the same graph and draw curves of best fit. Make sure to label the two curves.

2. [SP 6] Use the data to identify the optimal pH of each enzyme. Justify your response.

3. [SP 6] Make a statement relating the optimal pH for each enzyme and the environment in which the enzyme is found.

4. [SP 1] Explain the effect of a change in pH on enzyme activity that might account for the pattern seen in the data.

5. [SP 2, SP 6] Salivary amylase breaks down starch into glucose. The digestion of starch by salivary amylase begins in the mouth, ceases in the stomach, and resumes in the small intestine. Use the graph to explain this observation.

6. [SP 2, SP 4] Draw a graph to show the expected activity of a typical human enzyme as the temperature is increased from 0^{o}C to 50. Justify your graph.