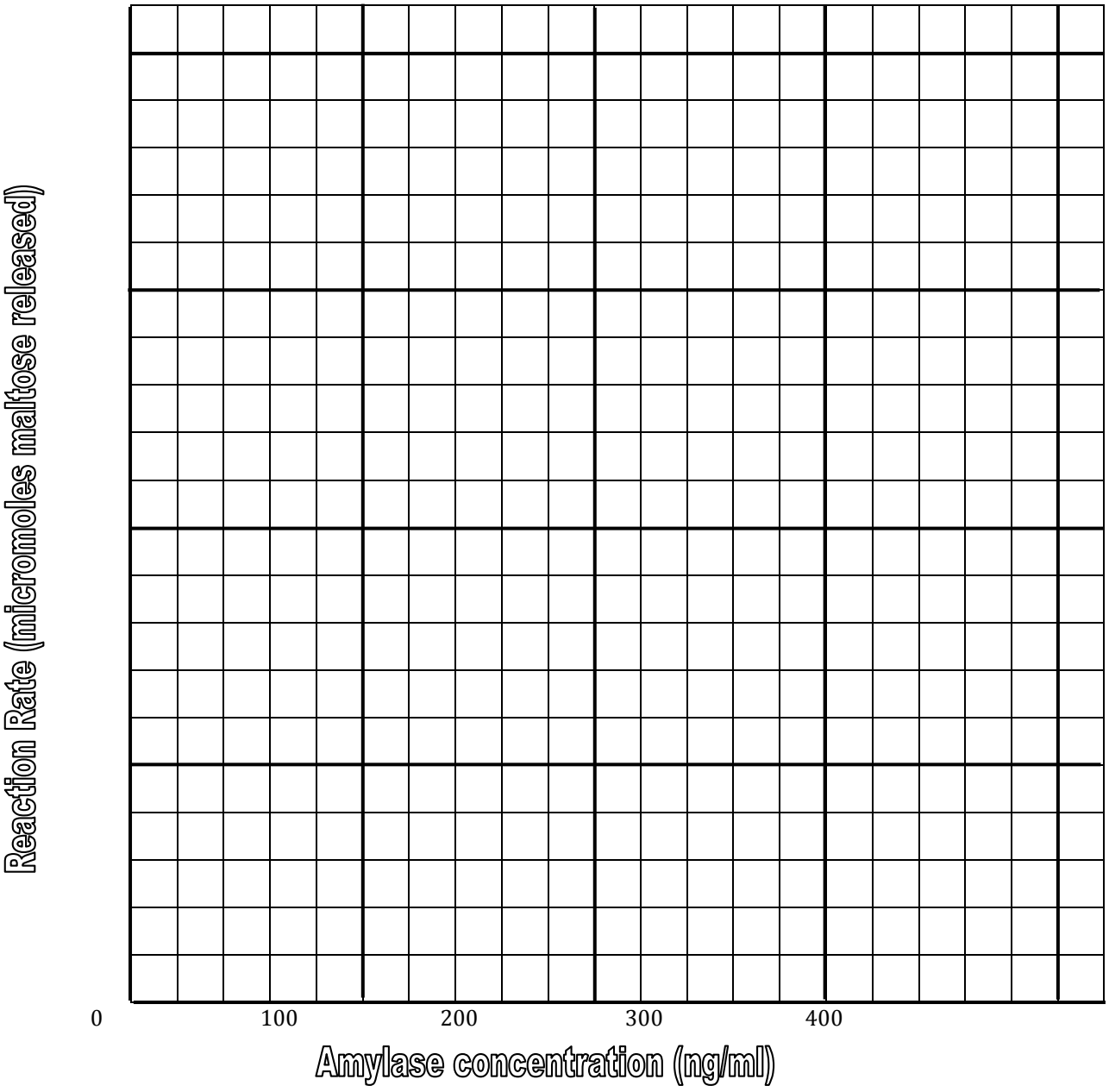
Transformation and Enzyme Worksheet. **Due at the start of your next lab.**

Name _____ GSI & Sect # _____ Station # _____

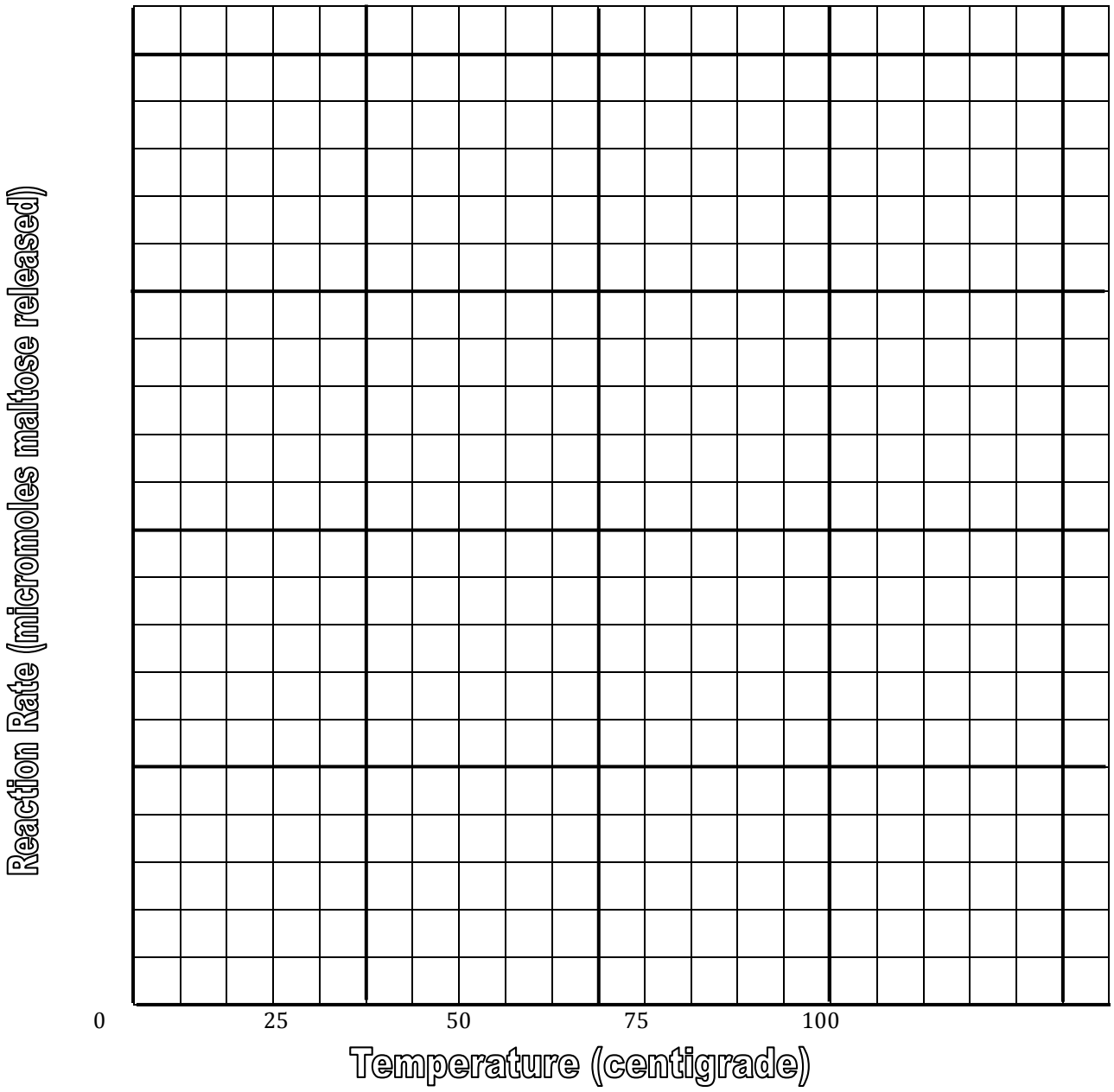
1. Did you label the bottom of both of your plates and then tape the two plates together using small pieces of tape? Circle one: **Yes / No** Did you place them in the tray upside down (agar up) at the instructors bench? **Yes/ No**

2. a) Graph your results from **Part I- Relationship between enzyme concentration and enzyme activity**. You must convert Optical Density into µmoles of maltose.



2. b) Would you expect a linear or non-linear dependence based upon how enzymes function as catalysts? Explain in terms of a simple model for enzyme catalysis. See the tutorial if needed.

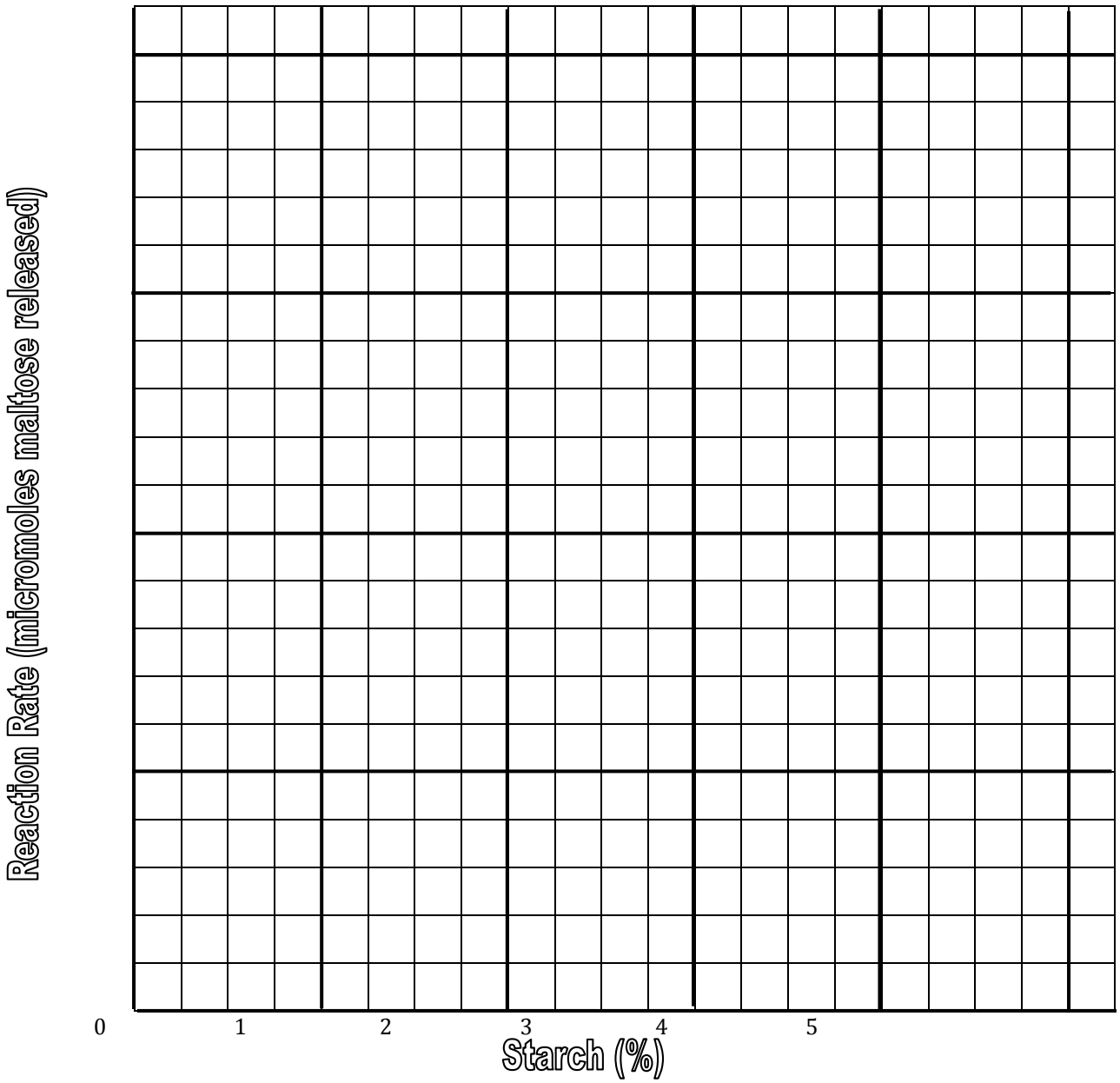
3. a) Graph the results of one set of data for **part II-A.** DO NOT AVERAGE CLASS DATA – instead pick the best set of data (or plot your own if you did this part).



3. b) What is the temperature optimum of salivary amylase? How does this compare to body temperature? (include units)

4. Explain the basis for a temperature optimum in terms of enzyme structure and kinetics. Be sure to explain exactly how temperature affects enzyme structure and how this in turn affects activity. Be sure to explain exactly how temperature affects kinetics and how this in turn affects activity.

5. a) Graph the results of one set of data for **part II-B.** DO NOT AVERAGE CLASS DATA – instead pick the best set of data (or plot your own if you did this part).



5. b) Use your graph above to determine the Michaelis constant (K_m). Show your work on the graph and include units! (For help, refer to the enzyme tutorial).

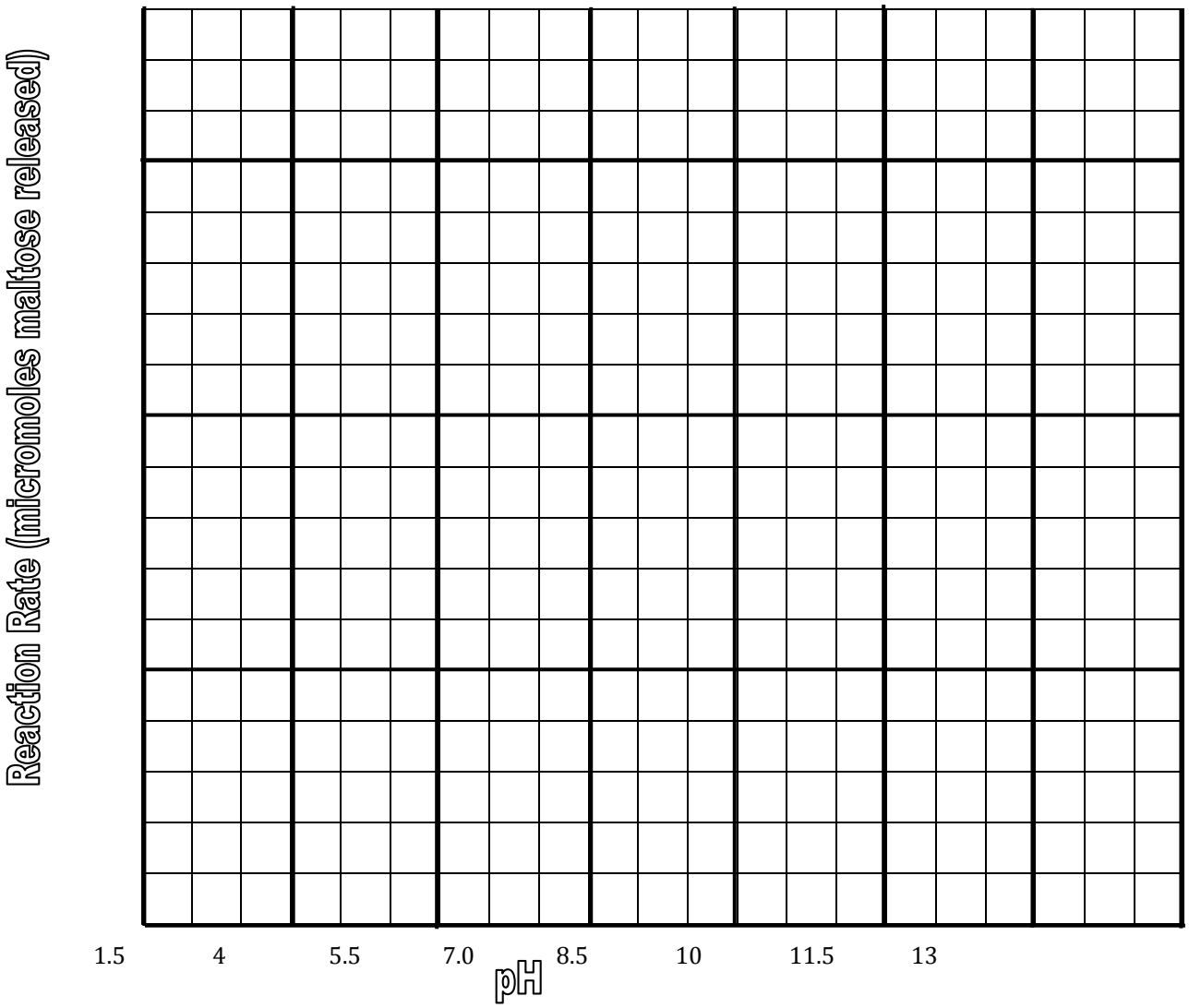
5. c) In terms of enzyme and substrate interactions, explain the various portions of your graph (there are 3 portions). See the tutorial for an example.

6. Record one set of data for **part II-C**. Do not average class data. Instead pick the best (or your own if you did II-C) data and use your graph from Part I to determine the activity of undiluted saliva.

Activity of undiluted saliva = ng/ml.

Experimental Dilution.	Optical Density	µMoles Maltose
1/ 100		
1/ 1,000		
1/ 10,000		
1/100,000		

7. a) Graph the results of one set of data for **part II-D.** DO NOT AVERAGE CLASS DATA – instead pick the best set of data (or plot your own if you did this part).



7. b) What is the pH optimum of salivary amylase? What would you expect the pH of your mouth to be?

8. pH affects enzyme activity because affects the structure of the enzyme due to ionization of R groups (such as COOH and NH2). Fill in the table below to illustrate how pH affects the ionization of COOH and NH2 groups. pH 7 has been done for you. Indicate if the interaction between the two groups at that pH is favored.

	pH 1	*pH 7*	*pH 14*
COOH or COO-		*COO-*	
NH_2 Or NH_3^+		*NH_3^+*	
interaction		*Favored!*	