MiSP Enzyme Action Assessment L3

Name _____ Date _____

1. Read the list of statements below. Put a check mark next to each statement that is *true* about enzymes and enzyme activity. Rewrite ***false*** statements to make them true.

_____ Enzymes are catalysts that speed up chemical reactions.
Rewrite false statements:

_____

_____

_____ When a substrate interacts with an enzyme, the substrate does not change.
Rewrite false statements:

_____

_____

_____ There is only one kind of enzyme. It works with all of the reactions that occur in living things.
Rewrite false statements:

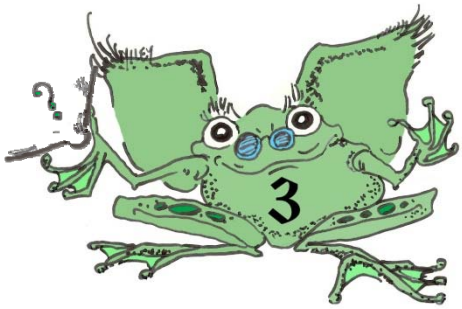
_____

_____

_____ Enzyme molecules are reusable.
Rewrite false statements:

_____

_____



2. Some laundry detergents have enzymes in them to help break down dirt molecules on clothes. On the basis of the experiment where enzyme reactions were tested at different temperatures, what should the instructions on the laundry detergent say about water temperature if a person wants her or his clothes to be cleaned faster?

_____

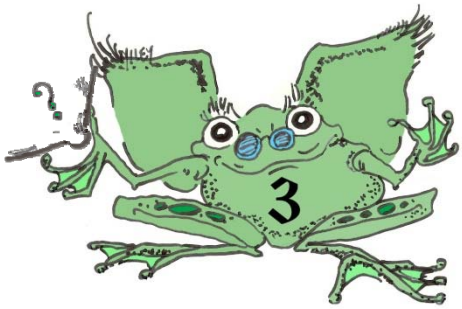
_____

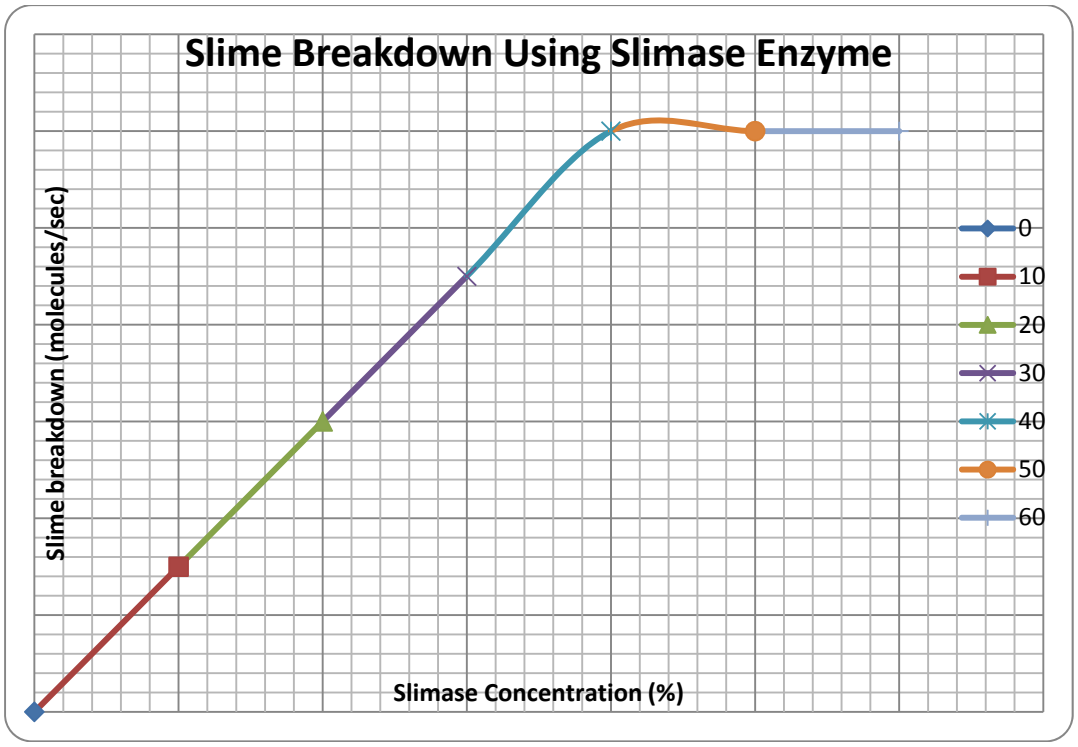
_____

Harry Potter at Hogwarts School learned in his potions class about an enzyme called "slimase" that chemically breaks down the slime produced by Boggarts. He and his schoolmates did an experiment where they measured the breakdown of slime at different concentrations of the enzyme slimase. (In the experiment the concentration of slime was kept constant and the temperature was kept constant.)

The results of the experiment are shown in the chart below, and a graph of the data is shown on the next page:

Concentration of the Enzyme Slimase (%)	Rate of reaction Molecules of Slime broken down (Molecules/second)
0	0
10	750
20	1500
30	2250
40	3000
50	3000
60	3000





3-6. Answer the question(s) on the basis of the chart and the graph. The graph shows the rate of slime breakdown (molecules/second) with increasing slimase concentration (%).

3. Complete the following sentence about the effect of slimase concentration on the rate of slime breakdown:

When the slimase concentration increases, the rate of the breakdown of slime

_____.

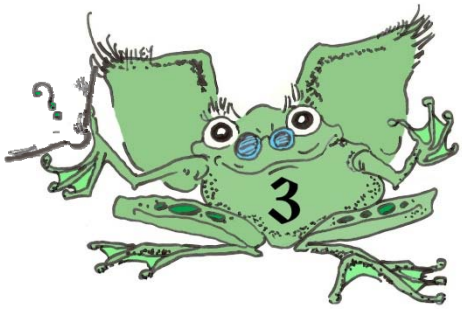
4. Predict the rate of slime breakdown when the concentration of slimase is:

25% _____ slime molecules per minute

70% _____ slime molecules per minute

5a. The unit rate of change (slope) of the graph from 0% to 40% slimase is +75 molecules of slime per % slimase concentration or $\frac{+75 \text{ molecules slimase}}{\% \text{ slimase concentration}}$

What is the slope from 40% to 60% slimase concentration?



_____

5b. What does the slope from 40% to 60% slimase tell you?

_____

_____

_____

6a. What is the formula for the line from 0% to 40% slimase?

_____

6b. What is the formula for the line from 40% to 60% slimase?

_____

6c. Pick the right formula from 6a or 6b to calculate the breakdown of slime molecules when the slimase concentration is 32.4%. Show your work.

_____ slime molecules per minute