Student Sheet **Name**_____

Title: Liver and Enzymes

Introduction: Enzymes allow chemical reactions in our cells to take place at a lower temperature than they would otherwise. However, like all chemical reactions, some heat is given off. We will measure the activity of a liver enzyme named catalase as it breaks hydrogen peroxide down into oxygen and water by measuring the temperature of the solution. You will also compare the reaction of enzymes alone and with other chemicals added.

Materials: Intel temperature probe, CBL and graduated cylinder, hydrogen peroxide (3%) other chemicals, raw liver, 2 test tubes, test tube rack, tweezers

Prediction: What will happen to the temperature of the reaction?

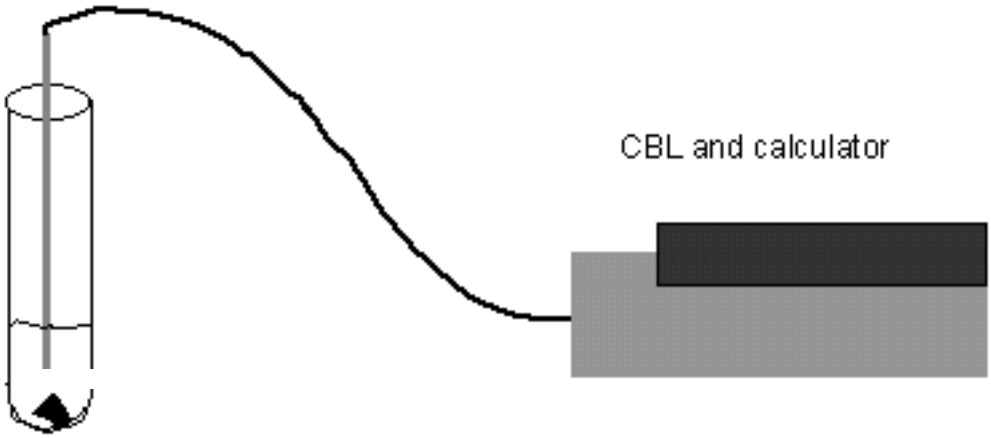
Procedure:

Part A

1. Add 5 ml of hydrogen peroxide to a test tube.
2. Program the probe to take readings every 30 sec. for 10 readings.
3. Remove the probes just long enough to add a small piece of liver and push start on the calculator. Return the probes to the solution quickly.
4. Wait until the 5 minutes is up.
5. Quit the program and push “lists” to find your data.
6. Record the data on the data table.

Part B

1. Add 5 ml of hydrogen peroxide and 5 mL of another chemical to the two test tubes.
2. Program the probe to take readings every 30 sec. for 10 readings.
3. Remove the probes just long enough to add a small piece of liver and push start on the calculator. Return the probes to the solution quickly.
4. Wait until the 5 minutes is up.
5. Quit the program and push “lists” to find your data.
6. Record the data on the data table.



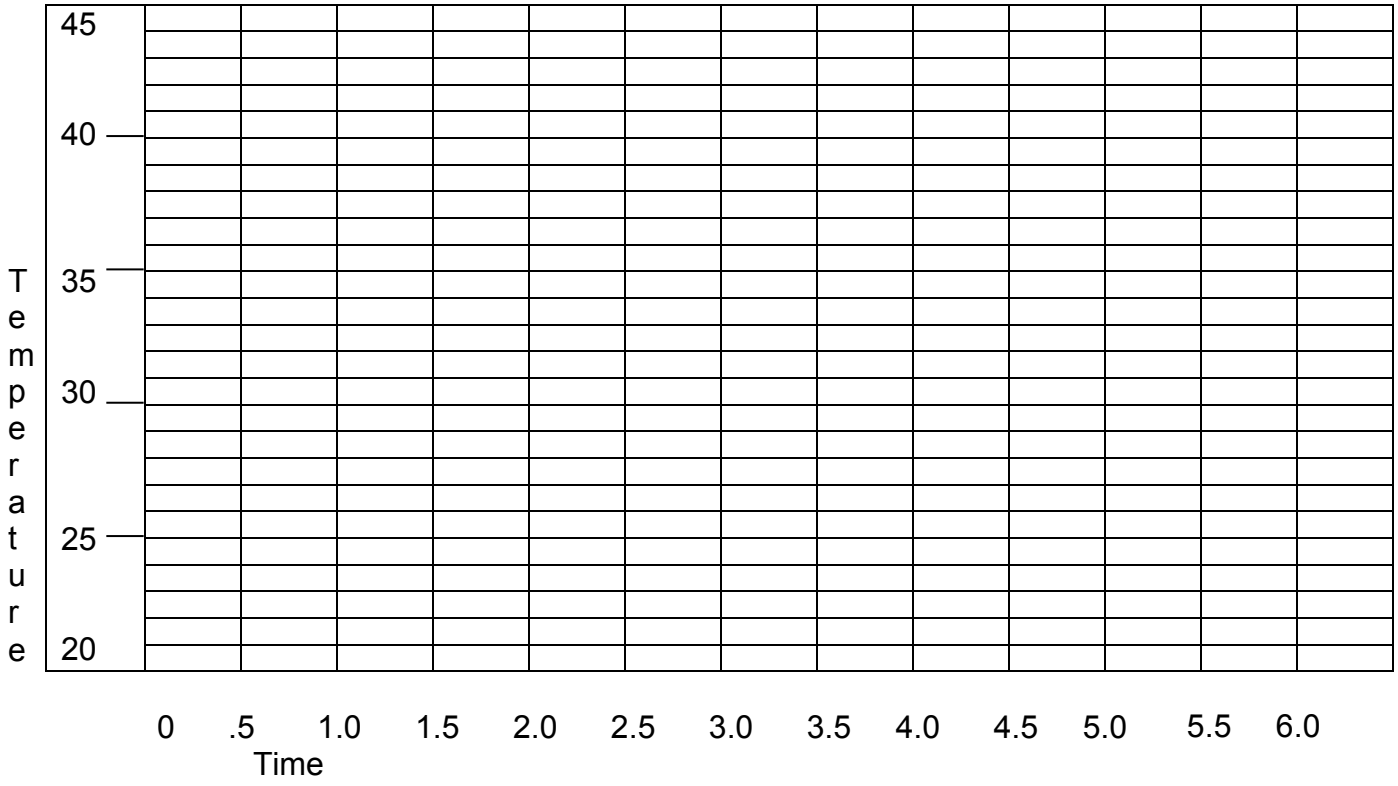
Data:

Part A

	Temperature (in C) After Adding Liver											
Trial	**Minutes**											
	0	.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	Highest temp
1												

Part B

	Temperature (in C) After Adding Liver and HCl											
Trial	**Minutes**											
	0	.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	Highest temp
1												



Analysis:

1. What evidence shows that a chemical reaction took place in the test tube?

3. How did adding your other chemical affect the action of the liver enzymes as measured by heat given off?

4. What evidence indicated that oxygen was given off?

5. The formula for hydrogen peroxide is H_20_2. Write the formula for the chemical reaction in the test tube:

6. What part do the liver enzymes play in this reaction?

Conclusion: