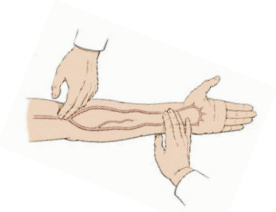
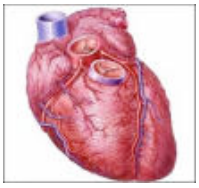
Name:_____ Section:_____



Heart Rates Lab



When you go for a fast run, you notice that you start to pant and sweat. Have you ever thought about what happens to your heart? In this activity you will investigate what happens to your heart rate as you increase your activity level.

Problem/Question:

What happens to a person's heart rate as that person increases his or her activity level?

Information/Research:

Take some time to gather information on heart rates and how/why they fluctuate as a person's activity level changes. You should list the information below.

_____

_____

_____

_____

_____

_____

_____

Hypothesis:

Use the information you gathered from the previous page to sensibly complete the statement below. You should use the open space before the box to come up with a rough draft of your statement.

IF a person increases his or her activity level, ***THEN*** _____

_____

_____

_____

_____

BECAUSE_____

_____

_____

_____

_____

Experiment:

*Use the materials and follow the procedures below to test your hypothesis. Your observations/data should be recorded in the table on the reverse side of this page, and you should create an appropriately labeled bar graph to provide an additional illustration of your **average** data.*

Materials:

Partners
Stopwatch
Writing utensil

Procedures:

1. Find your heart beat by placing two fingers on your wrist. Ask for assistance if you experience any difficulty with this task.
2. Count each thump as one beat.
3. Sit in your chair. Have your partner time you for ten seconds as you count the number of beats.
4. Multiply the number of beats by six. This is how much your heart beats in a minute while you are **resting** (your resting heart rate).
5. Record the number of beats in the data table.
6. Stand up and have your partner time you for one minute as you walk around the class. At the end of a minute count the number of beats for ten seconds. Multiply the number of beats by six to determine the number of heart beats in a minute while **walking** (your walking heart rate). Record the data in the data table.
7. Repeat all aspects of step number six, this time while **running in place** (your running heart rate). Record your data.
8. Repeat steps one through seven with all members of the group and record all data.
9. Find the average heart rate for each category (resting, walking, and running) by adding the members' heart rates and dividing by the number of individuals in the group.
10. Using the grid below the data table or Microsoft Excel, create a bar graph illustrating your **average** data.

Member Name	Resting Heart Rate	Walking Heart Rate	Running Heart Rate
Total			
Average (Total/# of Members)			

Analysis:

Reconsider the experiment and refer to your data table and graph to answer the following questions.

1. What were the ***average*** resting, walking, and running heart rates for the group?

2. Why did you create a group average rather than simply using data from one person to make conclusions about the heart rate?

3. What did you (the experimenter) purposely change or manipulate in the experiment? Consider this the "***cause***" in a cause and effect relationship.

4. What was the response to the factor you purposely changed in the experiment? Consider this the "***effect***" in a cause and effect relationship.

5. What factor in the experiment allowed you to determine if there was an actual change in heart rate as the activity level changed?

6. What characteristics or components of the experiment were (or should have been) consistently the same or unchanged throughout?

7. What patterns or trends did you notice when looking at your data table and/or graph?

8. Did you encounter any issues/problems during your experimentation that may have affected the accuracy of your data? Explain your reasoning.

9. Does your data/results support your hypothesis? Explain your reasoning.

Conclusion:

Formulate a conclusion to the original problem/question that is based on the analysis of your data. In your conclusion be sure to re-state the problem/question, summarize what you did, describe whether your data/results support your hypothesis, and highlight any factors that could have impacted the accuracy of your data/results.