

Name:

Hour:

Date:

Homeostasis Activity

Instructions: Complete the following activity for Part 1. Then, using a biology textbook, answer the following questions from Part 2 to help you understand the importance of homeostasis to the survival of an organism.

PART 1: Homeostasis Activity

1. **ACTIVITY:** For this activity, you will need access to a clock/stopwatch and you will also need a piece of graph paper.

- a. Heart rates are measured in beats per minute. By placing a finger (not thumb!) on your wrist, feeling your pulse, watching a clock, counting the beats for 30 seconds, then multiplying the number of beats by 2, you can calculate your heart rate. While seated at your desk, find your pulse and then calculate your heart rate (in beats per minute).

b.

Resting Heart Rate (first data point) _____ beats per minute

- c. While still seated, describe your breathing, presence of perspiration, and how you are feeling in general in the space below.

- d. Next, if safe for you to do so, participate in a vigorous activity for at least one minute, or at least until you experience changes in the properties you described in “a” and “b” above.

- e. Immediately following your vigorous activity, using the protocol from “a”, sit down and calculate your new heart rate (in beats per minute).

Post-Activity Heart Rate (second data point): _____ beats per minute

- f. For the next 10 minutes, once per minute, record your heart rate and time on the table below while still seated, and then **plot the points on a graph** while you are waiting for your next reading, until you have all 12 points and exact times plotted.

- g. As soon as you begin calculating your active heart rate readings each minute, describe any changes to your breathing, presence of perspiration, and how you are feeling in general in the space below. **(Don't forget to continue taking data for 10 minutes!)**

Time (from stopwatch or convert clock times into minutes)	Heart Rate (in beats per minute- BPM)
START TIME 1: 0 MIN	Resting Heart Rate: _____ BPM
POST-ACTIVITY TIME (PAT) 2: MIN _____	2 nd Heart Rate: _____ BPM
(PAT +1min) TIME 3: _____ MIN	3 rd Heart Rate: _____ BPM
(PAT +2min) TIME 4: _____ MIN	4 th Heart Rate: _____ BPM
(PAT +3min) TIME 5: _____ MIN	5 th Heart Rate: _____ BPM
(PAT +4min) TIME 6: _____ MIN	6 th Heart Rate: _____ BPM
(PAT +5min) TIME 7: _____ MIN	7 th Heart Rate: _____ BPM
(PAT +6min) TIME 8: _____ MIN	8 th Heart Rate: _____ BPM
(PAT +7min) TIME 9: _____ MIN	9 th Heart Rate: _____ BPM
(PAT +8min) TIME 10: _____ MIN	10 th Heart Rate: _____ BPM
(PAT +9min) TIME 11: _____ MIN	11 ^h Heart Rate: _____ BPM
(PAT +10min) TIME 12: _____ MIN	12 th Heart Rate: _____ BPM

- h. After completing the table, create a graph of the information. Put Heart Rate on the Y-axis and Time on the X-axis. LABEL AXES AND UNITS!
 - i. After completing the activity and graph, analyze your graph and then describe your observations below, in as much detail as possible!
-
- j. Predict why your body responded the way it did following vigorous activity. How might this help organisms survive?

Part 2: Homeostasis Information

- 2. Define “homeostasis” in a way that makes sense to you, and list several examples of homeostasis and how they are beneficial to the organism.
-
- 3. Contrast “negative feedback” and “positive feedback”, identify the purpose of each, and explain at least one example of each. Which one did your body exhibit in Part 1 of this activity? How do you know?

4. From an example in a textbook, DRAW A DETAILED figure that demonstrates homeostasis. Be sure to explain the purpose of **each** step in maintaining homeostasis, and then summarize what your drawing explains about how homeostasis helps organisms to survive.