

Names: _____ Date _____ Section _____

Exercise and Homeostasis Lab Worksheet

Problem

How does exercise affect a person's heart rate, breathing rate, perspiration level (sweat), and temperature?

Lab Safety

Be aware of how you are feeling during the lab. If you have any conditions that could cause you to be dizzy or lightheaded during exercise, please inform the teacher. Any student who feels dizzy or otherwise unwell during the exercise should cease their activities.

Form a Hypothesis

If a person increases their activity level, then they will experience a(n) increase/decrease (Circle one) in their _____,

because _____

Procedure

Read through directions carefully before you start

1. Work in pairs.

Partner A is the person whose birthday is coming next – Name _____

Partner B is the other person – Name: _____

2. Partner A will start the lab by doing jumping jacks (at a steady pace for 4 minutes).

Partner B will be the timekeeper and the data recorder for Partner A.

3. Before the exercise record Partner A's *resting* body color (face/arms), perspiration level, breathing rate, pulse, and temperature in the data table.

**The temperature will only be taken once at rest and once after 4 minutes of exercise.

4. Then, during exercise record these variables **at one-minute intervals** (see data table below).

After each minute interval, you will record your observations for body color and perspiration level. Partner A will count the number of breaths they take in 15 seconds, and Partner B will record it. Then Partner A will take their pulse for 15 seconds, and Partner B will record it.

5. Repeat for 5 minutes.

6. Calculate: (after exercise)

Blackline Master #1

- Multiply the number of breaths by four to get breaths per minute for each minute interval.
- Multiply the number of heart beats by four to get beats per minute for each minute interval.

7. Switch Roles. (Partner B – doing jumping jacks, Partner A – timekeeper and data recorder)

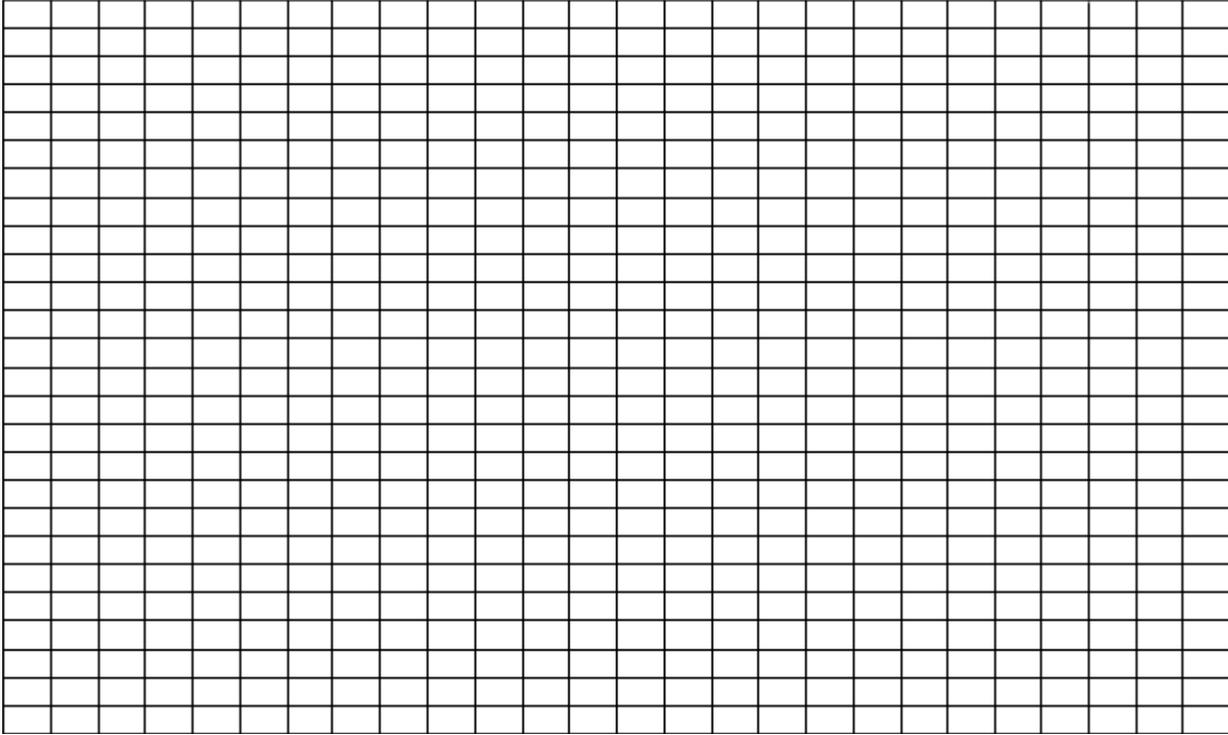
8. Graph your data using an appropriate scale. Remember to label the x and y axis. You will create two line graphs for your own data.

Time Intervals	Body Color	Perspiration Level	Breathing Rate (breaths/min)	Heart Rate (beats/min)
Rest (0 Minutes)			_____ x 4 = _____ (15 sec.) (total)	_____ x 4 = _____ (15 sec.) (total)
1 Minute			_____ x 4 = _____ (15 sec.) (total)	_____ x 4 = _____ (15 sec.) (total)
2 Minutes			_____ x 4 = _____ (15 sec.) (total)	_____ x 4 = _____ (15 sec.) (total)
3 Minutes			_____ x 4 = _____ (15 sec.) (total)	_____ x 4 = _____ (15 sec.) (total)
4 Minutes			_____ x 4 = _____ (15 sec.) (total)	_____ x 4 = _____ (15 sec.) (total)
1 Minute Rest After Exercise 5 Minutes			_____ x 4 = _____ (15 sec.) (total)	_____ x 4 = _____ (15 sec.) (total)

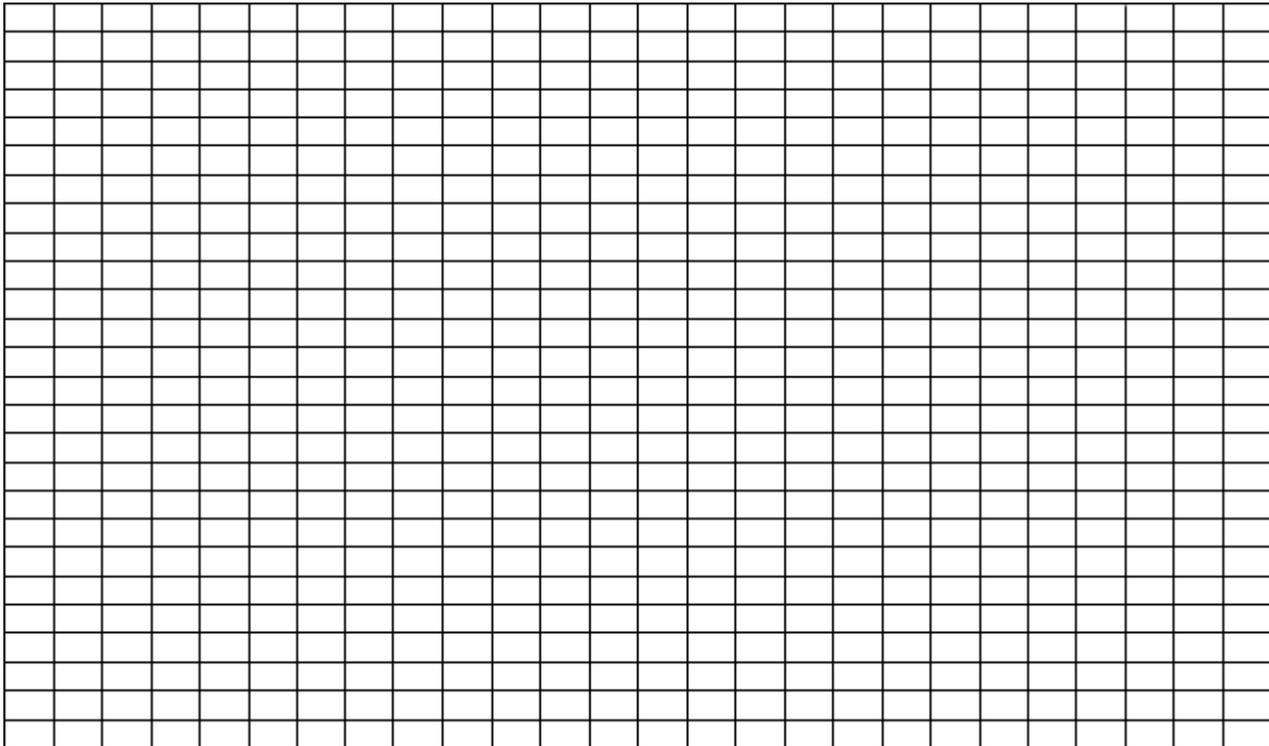
Data

Temperature at rest _____ After 4 minutes of exercise _____

Breathing Rate at Various Intervals of Exercise



Heart Rate at Various Intervals of Exercise



Discussion

1. We are measuring the heart rate and respiratory rate. What are two body systems that work together in this exercise?

_____ & _____

2. How does the respiratory rate and heart rate change? Why do these changes accompany exercise?

3. How do they work together to maintain homeostasis during exercise?

4. Why do you think there is a change in body temperature, color change and perspiration level? In what ways does your body attempt to maintain homeostasis?

5. Draw a Conclusion: Do your results agree with your hypothesis? Why or why not? Cite specific evidence to support your conclusion.
