



Vital Signs

Student Lab Packet

Name: _____ Date: _____

Vital Signs

How does exercise affect your heart and lungs?

Purpose: In this experiment I will be measuring _____
by _____.

Procedure:

1. Gather all lab materials with your lab group. You can have up to 3 people in your lab group. Your group will need some way to keep track of time.
2. **Find your resting heart rate:** Each person will be recording his or her resting heart rate first. To do this, press two forefingers to the side of your neck until you can feel your pulse.
3. Count the number of heartbeats that occur in 6 seconds. Multiply this number by 10 to find the number of heartbeats per minute.
4. Record your resting heart rate in the corresponding data table.
5. **Find your resting breathing rate:** Each person will now be recording his or her resting breathing rate. To do this, count the number of breaths you take in 6 seconds. Multiply this number by 10 to find the number of heartbeats per minute. Record your breathing rate in the data table.
6. Each team member should do jumping jacks for 30 seconds. Immediately after the 30 seconds have passed, measure your heart rate. Then, measure your breathing rate. Record both values in the table.
7. Repeat Step #6 after 60 seconds of exercise.
8. Repeat Step #6 after 90 seconds of exercise.

Create Your Hypothesis:

If I exercise for a longer amount of time, my heart rate will _____
and my breathing rate will _____ because _____
_____.

Data Collection:

Person #1 Name: _____

Person #2 Name: _____

Person #3 Name: _____

Before exercising, record each person's resting heart and breathing rates. This is the number of beats/breaths when at rest (NOT exercising).

	Resting Rate	
	Heart rate	Breathing rate
Person #1		
Person #2		
Person #3		
Average		

Hint: You can calculate the average heart and breathing rate by adding up the number of beats/breaths for Person #1, #2, and #3 and then dividing by 3.

Record each person's heart and breathing rate after 30 seconds of jumping jacks.

	After 30 seconds	
	Heart rate	Breathing rate
Person #1		

Person #2		
Person #3		
<i>Average</i>		

After resting, record each person's heart and breathing rate after 60 seconds of jumping jacks.

	After 60 seconds	
	Heart rate	Breathing rate
Person #1		
Person #2		
Person #3		
<i>Average</i>		

After resting, record each person's heart and breathing rate after 90 seconds of jumping jacks.

	After 90 seconds	
	Heart rate	Breathing rate
Person #1		
Person #2		
Person #3		
<i>Average</i>		



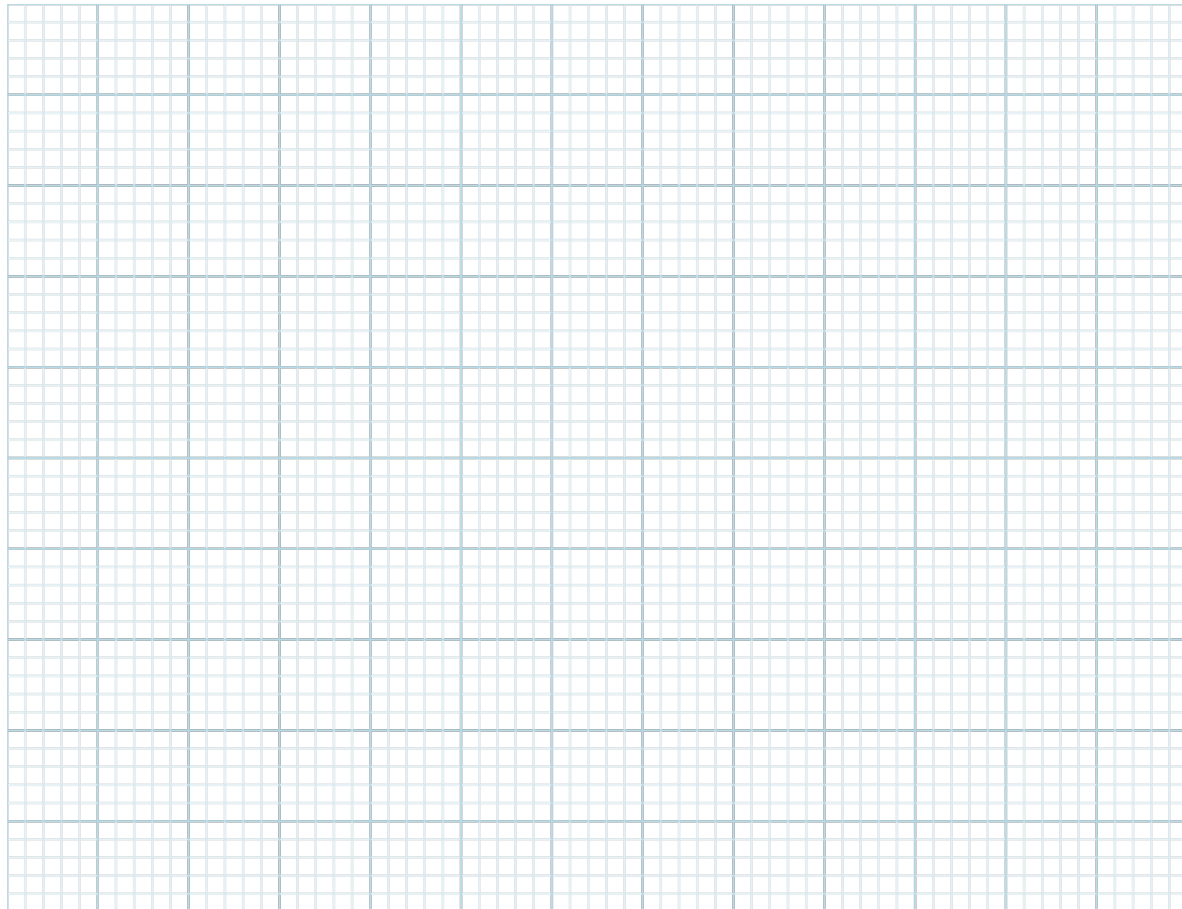
Data Analysis:

1) My resting heart rate was _____ beats per minute. My resting breathing rate was _____ breaths per minute. After 90 seconds of exercise, my heart rate was _____ beats per minute and _____ breaths per minute.

2) How did your resting heart rate compare to your heart rate after 90 seconds of exercise? Is this what you expected? Why or why not?

3) Did you observe similar results across all three people? Is this what you expected? Why?

4) Create a line graph of each person's heart rate over time below. Graph the results for all 3 people in your lab group by using different colors for the three line graphs. Don't forget to include a key!



0s

30s

60s

90s

Time (seconds)

Line Graph Key:

Record the color you used for each person below.

- Person #1
- Person #2
- Person #3



Conclusion:

Based on your data, what impact did exercise have on your heart and lungs? How could you tell?
