Name: _____ **Class:** _____ **Date:** _____

Changes in Heart Rate

Learner Outcomes:

- Describe changes in body functioning in response to changing conditions *(e.g., changes to heart rate in response to exercise)*

Key Terms:

Heart Rate	Capillaries	Ventricle
Pulse	Gas Exchange	Radial pulse
Arteries	Aorta	Carotid pulse
Veins	Atrium	

Background Information: Your heart is essentially two pumps whose job it is to pump oxygen, nutrients and wastes throughout your body. When you exercise, your metabolism changes, influencing how quickly your body must process its nutrients and wastes.

Question: How does your heart respond to exercise?

Hypothesis:

Materials:

Stopwatch or timer

Procedure:

1. Practice taking your pulse and measure and record your resting heart rate.
2. Exercise vigorously for 5 minutes by doing jumping jacks. After 5 minutes are up, measure and record your pulse.
3. After 1 minute, measure and record your pulse again.
4. Continue recording your pulse in 1 minute intervals for 5 minutes and record your results.

This investigation / activity has been adapted from:
Mah K, Martha J, McClelland L, et al. *Science in Action 9.* Toronto, ON: Addison Wesley.

Observations:

Table Title: _____

Time	# of pulses in 10 seconds	Heart Rate (pulses/min)
Before Exercise (*resting heart rate*)		
Immediately After Exercise		
1 minute after exercise		
2 minutes after exercise		
3 minutes after exercise		
4 minutes after exercise		
5 minutes after exercise		

Analysis:

1. Prepare a graph of your experimental data.

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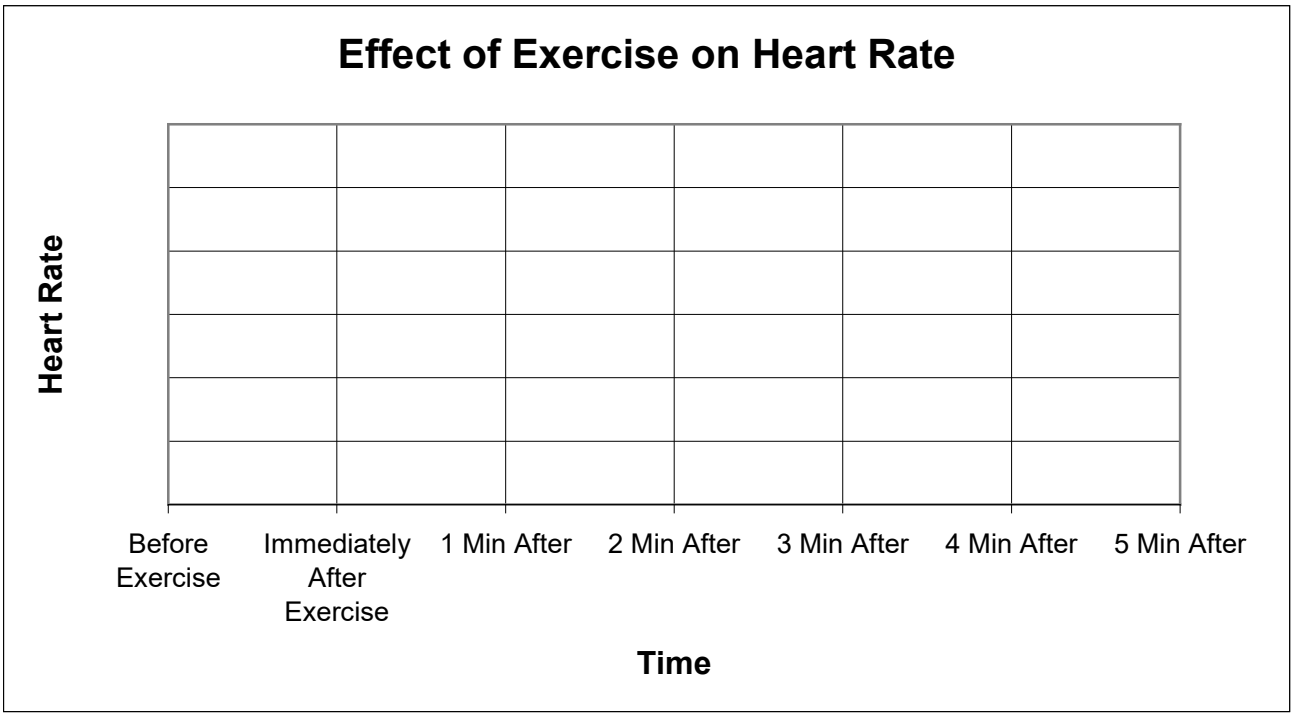

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2. What was your lowest heart rate? When did this occur?

3. What was your maximum heart rate? When did this occur?

4. Why did your heart rate change during exercise?

5. Why did your heart rate stay high even after your exercising stopped? Explain.

6. What was the best way to measure your pulse? Why?

Conclusion:

Describe the impact of exercise on your heart rate and explain why in terms of stimulus and response.

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Extension:

1. If you have ever watched a really scary movie, or you have felt very nervous, you might have noticed that your heart is beating fast even though you haven't been exercising. Why do you think this is?

2. Research two other types of environmental stimuli that influence your heart rate and describe how and why they have an effect.

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