Instructions: Your worksheet will be a mini-lab report that captures the **intellectual content** of a full lab report, but in skeleton form. It is designed to force you to get to the heart of the matter. Include the four elements arranged as: Introduction (1+2), Results (3), and Discussion (4).

1. Statements of purpose: Use these to frame your thinking about this lab.

Electrical signals and blood volume: *The cardiac cycle begins with an electrical signal that stimulates atrial and ventricular contraction that produces pressure and volume changes in blood flow through the circulatory system. We can visualize the electrical signals using \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and changes in blood volume using \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.*

Heart sounds – *The valves of the heart open and close with changes in pressure, producing a ‘lub’ when the atrioventricular valves (AV) close and a ‘dub’ sound when the semilunar valves close. We can correlate these sounds to the electrical signals of the heart observed with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.*

ECG and activity -- When animals exercise, metabolism increases, requiring more oxygen delivery to the tissues. We can get more blood flow by increasing C*ardiac Output, which is the product of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.*

*We can analyze each component of the ECG to determine how the body delivers more oxygen.*

**(2)** Expected Findings: If these mechanisms are at work, what would you expect to see in your data? Be specific and relate back to observable parameters: (explain how you controlled for confounding parameters, if appropriate)

Electrical signals and blood volume: If the electrical signals are correlated with blood volume to produce the cardiac cycle, we expect to see...

Heart sounds: If the heart valves are involved in blood volume changes during the cardiac cycle, we expect to see...

ECG and activity:

(3) Results: Include either a figure or a table for each important result (you may work together with your group to produce the figures or tables). Follow guidelines for lab. Write one sentence pointing out what trends are shown in each display item (this is separate from table/figure captions). NO RAW DATA.

(4) Discussion: In paragraph form, briefly discuss the main scientific take-aways from these experiments. Use specific results that back up your statements or speculate on the significance of the results. Organize by hypotheses above.

Individual assignment. Text must be your own, but you may work together with your group to produce figures/tables. You may edit this sheet. Submit by hard copy next week.