

NAME _____ DATE _____ PERIOD _____

"OH, MY ACHING MUSCLES!"

BACKGROUND INFORMATION: Muscles are attached to bones. As muscles contract they move the bones to which they are attached. This is a basic type of work accomplished by the human body. As muscles are used, lactic acid builds up, resulting in fatigue.

PURPOSE: To determine how much work a muscle can do before fatigue occurs.

MATERIALS: watch with second hand tennis ball

PROCEDURE:

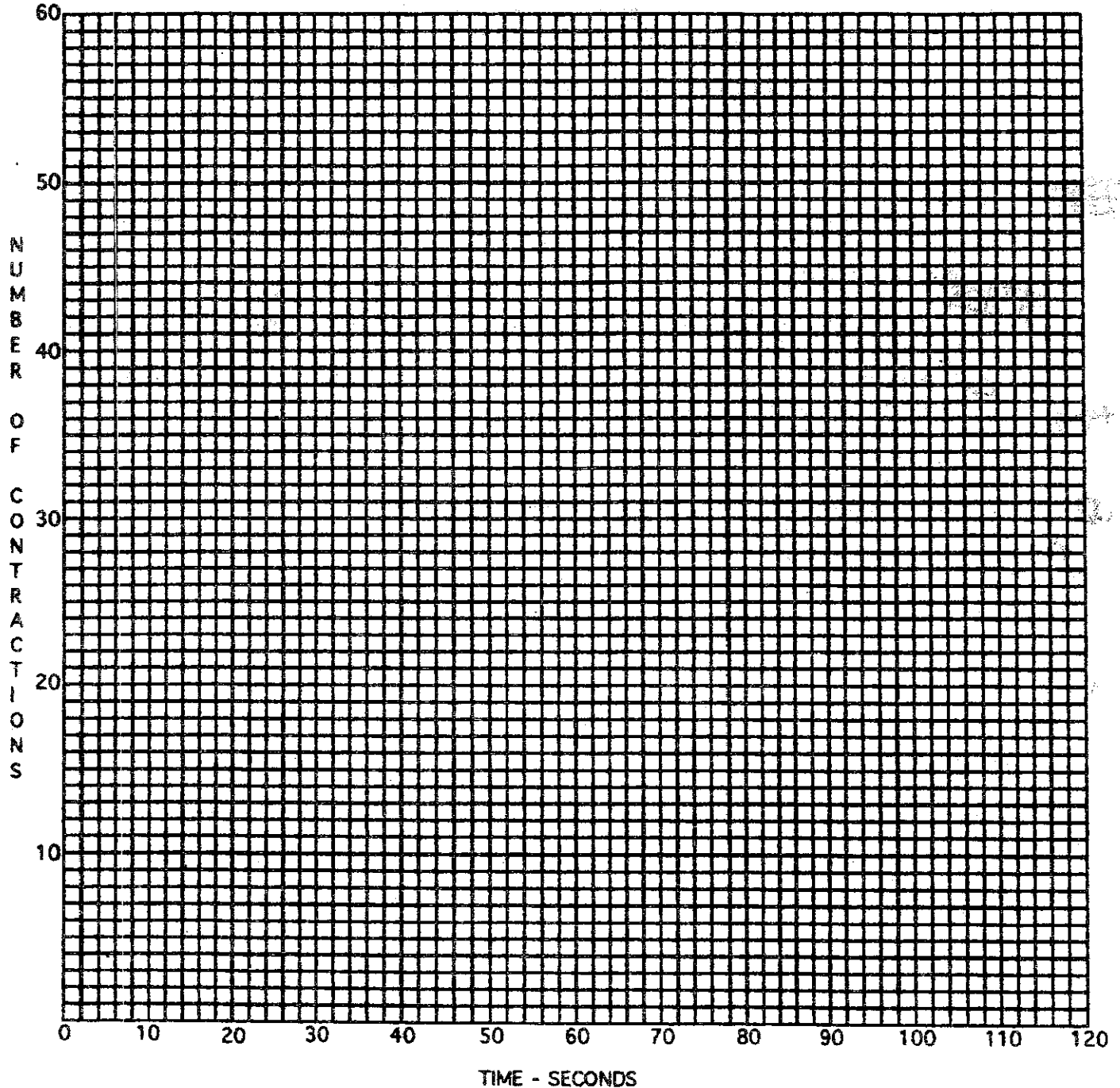
1. Perform this activity with a partner. One partner will observe and record while the other performs the experiment. Then you will reverse roles.
2. Record your data on your paper.
3. Place a tennis ball in the hand **opposite** of the one with which you write.
4. Squeeze the ball rapidly and as hard as possible at a steady pace, until your hand and arm are completely fatigued.
5. Count out loud so your partner can record the number of squeezes every **10 seconds**. Your partner will record on **your** data sheet.
6. Start counting over after each 10 second interval.
7. If you reach 2 minutes (120 seconds), stop.
8. Rest for 1 minute.
9. Repeat the procedure a second time. **Use the same hand!**
10. Go for as long as you can, even if you cannot reach 2 minutes.
11. Rest for 1 minute.
12. Repeat the procedure for a third and final time. **Use the same hand!**
13. Go for as long as you can, even if you cannot reach 2 minutes.
14. Switch roles with your partner and record his/her data.

DATA:

TIME (sec):	TRIAL 1:	TRIAL 2:	TRIAL 3:
10			
20			
30			
40			
50			
60			
70			
80			
90			
100			
110			
120			

15. Plot the above data in the graph on the backside of this paper. The X coordinate should be used for **TIME (sec)** and the Y coordinate for the **NUMBER OF MUSCLE CONTRACTIONS**.
16. Give a title to your graph.

Title: _____



ANALYSIS & CONCLUSIONS:

1. Describe how the three trials are different from each other.
2. How does the amount of work done by the muscles compare for the three trials?
3. How does the work done in the muscles of your hands and arms compare to the work done by the muscle of your heart?