Laboratory 1- Physiological Instrumentation

1- A: Demystifying the black box

1- B: Units of Measure

Purpose:

Becoming familiar with the physiologist tools of trade

1-A

Materials:

- -Electrode
- -Input transducer
- -amplifier
  - -low and high frequency filters
  - -low and high gain
  - -centering knob
- -output transducer
  - -oscilloscope
  - -chart recorder
  - -needle indicators
- -other electrical components
  - -stimulator
  - -physiograph/polygraph

Methods:

1. Observe the operation of these instruments
2. Make a concerted effort to recognize and identify each on sight
3. Understand the application of the "black box" instrumentation to experiments and measurements of human physiological events

1-B

Methods:

1. Become familiar with the basic metric units of measure
2. Learn the basic unit of each measurement
3. Understand the significance of the prefixes
4. Complete the worksheet on pg 6

1-B

Results:

Linear Measurements:

1. length of lecture text 278 mm 27.8 cm
2. width of lecture text 216 mm 21.6 cm
3. depth of lecture text 40 mm 4 cm

Volume Measurements:

1. pour water in beaker and state volume

50 ml .05 liters

2. pour water from beaker into graduated cylinder and state volume
37 ml .037 liters

Mass Measurements

1. state mass of weight 20400 mg 20.40 g
2. put some water into the beaker and state mass of liquid in beaker 34920 mg 34.92 g

pH Measurements

1. pH of liquid A 5
2. pH of liquid B 7
3. pH of liquid C 9

Time Measurements

1. determine your pulse after 15 seconds
   1.2 beats/second
   72 beats/minute
2. determine your pulse after 60 seconds
   68 beats/minute
   1.13 beats/second
   1130 beats/millisecond

Discussion:

When using different instruments in the science lab, it is important to follow the instructions of the devices you are using in order to determine accurate information being recorded for analysis. It is also important to know the conversion rates of measurements. If you do not know how to work measuring devices and conversion rates it may be difficult to deliver the information needed in the research. If data is not recorded and converted correctly the results will be ineffective.

Conclusion:

In the reading of instruments being used in experiments, it is important to know how to read and analyze the date so the results you are developing are accurate.